F-811

IONOSPHERIC DATA IN JAPAN

FOR JULY 2016

VOL. 68 NO. 7

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≪Real Time Ionograms on the Web ・・・・・・・・・・・・http://wdc.nict.go.jp/index_eng.html≫

NATIONAL INSTITUTE OF INFORMATION
AND COMMUNICATIONS TECHNOLOGY
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the National Institute of Information and Communications Technology , Japan.

Stations	Geographic(WGS84)		Geomagnetic (IGRF-10(2005))		Technical Method
	Latitude	Longitude	Latitude	Longitude	
✳Wakkanai/Sarobetsu	45˚10'N	141˚45'E	36.4˚N	208.9˚	Vertical Sounding (I)
Kokubunji	35˚43'N	139˚29'E	26.8˚N	208.2˚	Vertical Sounding (I)
Yamagawa	31˚12'N	130˚37'E	21.7˚N	200.5˚	Vertical Sounding (I)
Okinawa	26˚41'N	128˚09'E	17.0˚N	198.6˚	Vertical Sounding (I)
Hiraiso	36˚22'N	140˚37'E	27.6˚N	209.1˚	Solar Radio Emission (S)

✳We moved the observation facilities at Wakkanai to Sarobetsu on February 2009. The new observatory is located at approximately 26km south from the old observatory. The observation at Sarobetsu commenced on March 6, 2009.

IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on a computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five characteristics of the ionospheric are listed below. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

foF2	Ordinary wave critical frequency for the ***F2*** layer
fEs	Highest frequency of the ***Es*** layer whether it may be ordinary or extraordinary
fmin	Lowest frequency which shows vertical iono-spheric reflections
h'Es ***h'F***	Minimum virtual height on the ordinary wave for the ***Es*** and ***F*** layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer, for example *Es* (for *foF2*).

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of very small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of problems occurring in the auto matic data processing system, but existence of film record.

c. Definitions of CNT, MED, UQ ,and LQ

Median count (**CNT**) is the number of numerical values from which the median has been computed. In addition to numerical values, the count may include a descriptive letter G.

Median (**MED**) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90, 90 and 99%, respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the *F* and *E* regions, respectively. The two solid arcing lines indicate the predicted values of *fxE* and *foE* calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

fxI	Top frequency of spread ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	Ordinary wave critical frequency for the ***F2***, ***F1***, ***E,*** and ***Es*** (including particle type ***E)*** layers, respectively
fbEs	Blanketing frequency of the ***Es*** layer, e.g. the lowest ordinary wave frequency visible through ***Es***
fmin	Lowest frequency that shows vertical ionospheric reflections
M(3000)F2 ***M(3000)F1***	Maximum usable frequency factor for a path of 3000 km for transmission by the ***F2*** and ***F1*** layers, respectively
h'F2 ***h'F*** ***h'E*** ***h'Es***	Minimum virtual height on the ordinary wave for the ***F2,*** whole ***F, E*** and ***Es*** layers, respectively
Types of ***Es***	See below b. (iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced a numerical value on the monthly tabulation sheets, if necessary.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, if necessary.

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the part *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km as-sociated with high absorption and large *fmin.*

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

c. Definitions of the CNT, MED, UQ and LQ

Median count (**CND**) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (**MED**) is the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

HOURLY VALUES OF foF2 AT Wakkanai

JUL. 2016

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	52	51	47	43	42	42	A	49	58	61	58	A	A	56	52	A	101	104	84	133	66	55	A	A
2	A	46	A	A	A		88	110	51	59	A	A	A	A	A	A	108	151	129	A	109	A	A	A
3	51	48	42	A	A	50	60	47	A	126	170	138	104	88	A	A	A	89	110	A	63	63	59	53
4	52	52	42	42	42	44	52	A	A	A	84	108	A	A	A	A	79	174		109	A	67	66	A
5	52	50	44	47	44	48	A	55	55	55	A	A		A	89	A	A	A	60	64	58	60	61	54
6	54	52	52	49	47	51	55	A	A	88	77	A	A	57	55	59	54	A	111	A	A	65	67	59
7	53	47	42	42	42	48	A	A	A	A	140	179			A	N	A	52	56	60	62	A	69	60
8	52	50		47	42	40	A	A	55	A	A	A	A	A	82	A	A	99	A	46	67	54	67	54
9	42	34	41	42	38	A	A	A	A	A	A	A	A	110	67	A	A	A	51	A	58	59	57	A
10	A	50	48	37	38	44	35	A	A	A	A	A	A	A	39	A	34	89	102	50	56	54	52	52
11	48	51	48	42	44	45	A	54	A	A	A	A	54	57	A	63	A	42	89	79	A	56	A	A
12	A	49	A	A	A	45	46	52	89	120	211	A	205	A		A	A	90		A	A	A	64	52
13	52	A	A	47	40	42	46	A		190	139	A		A	A	A	51	51	50	53	A	60	61	A
14	A	52	42	42	86	A	53	A	54	89	121	110	102	149		59	55	54	55	55	A	66	55	A
15	42	44	50	42	42	38	A	A	87	174	A	A	121		107	A			177	92	54	A	51	A
16	51	A	49	A	A	45	52	A		A	A	A	A	A	A	A	159	108	189	A	70	N	A	54
17	52	A	54	51	46	48	A			102	109	119	57	54	58	58	56	57	A	64	67	64	63	62
18	A	51	A	42	40	44	A	58	59		A	A	A		A	A	89		A	80	A	71	A	A
19	A	50	A	A	48	55	87	110	A	110	A	A	A	A	58	56	A	54	56	71	67		63	A
20	A	A	48	47	44	51	A	74	103	108	60	56	A	80	65	77	80	A	82	77	69	67	A	A
21	52	46	A	46	47	60	48	A	101	111	A	A	A	A	A	A	51	50	A	A	A	A		A
22	51	54	54	49	46	A	N	A	89	A	A	98	A	A	A	A	A	54	A	67	71	65	67	63
23	54	47	42	42	38	32	47	A	55	A	A		A	A	A	N	54	55	58	68	75	A	64	66
24	54	51	47	40	35	A	A	A	43	A	A	A	A		A	54	51	49	50	A	54	52	A	58
25	A	49	A	47	A	A	55	A	111	89	A		86	129	70	A	A	61	58	67	72	71	67	66
26	34	51	46	46	46	61	42	A	A	50	A	A	56	A	A	A	69	A	A	A	51	84	A	A
27	52	47	42	40	40	44	54	53	A	A	147	A	A	62	102	A	54	53	54	51	A	51	47	42
28	38	42	A	38	89	A	A	A	A	53	A	142			170	105	A	152	A	A	64	A	52	A
29	41	42	A	A	A	A	A	N	A	A	A	91	A	A	A		60	71	79	58	54	55	52	48
30	52	50	A	47	A		47	87	68	A	58		53	A	53	56		122	160	A	63	50	A	A
31	A	46	41	38	42	45	59	A	A	A	A			A	A			110	A	108	54	54	54	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	27	20	25	24	22	17	11	15	16	12	9	9	10	14	9	17	24	21	20	22	22	21	16
MED	52	50	46	42	42	45	52	55	59	96	115	110	86	71	66	59	56	66	79	67	64	60	61	54
U Q	52	51	48	47	46	50	57	87	89	115	143	140	112	110	89	70	84	106	110	79	69	66	66	61
L Q	48	46	42	42	40	44	46	52	55	60	68	94	55	57	55	56	52	53	55	56	56	54	53	52

HOURLY VALUES OF fEs AT Wakkanai

JUL. 2016

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	31	35	57	28	32	48	40	48	57	G	43	58	G	G	119	83	92	97	166	53	40	78	111
2	90	59	54	65	61		73	48	49	68	69	126	83	48	56	92	85	101	95	79	165	115	103	91
3	34	41	32	59	100	38	40	40	65	108	138	112	94	67	71	90	74	71	81	57	40	36	44	48
4	40	26	27	25	25	G	136	71	95	104	94	144	70	62	70	65	64	101		127	113	40	46	68
5	45	30	37	26	25	48	64	161	49	46	41	43		48	76	63	108	94	117	24	54	50	43	47
6	46	41	34	27	25	35	53	57	61	90	68	66	114	43	G	41	51	82	91	150	84	46	26	G
7	G	28	27	24	G	G	56	72	60	44	51	85			84	74	61	43	48	38	36	51	49	G
8	26	G		G	G	G	154	48	110	164	65	84	47	68	69	52	84	105	91	46	38	G	G	G
9	G	G	25	G	48	69	60	84	115	126	56	60	65	89	66	76	68	56	78	83	44	39	32	49
10	41	40	34	G	25	34	40	56	59	73	74	56	58	58	45	44	46	67	126	69	40	42	42	26
11	47	27	27	G	34	40	59	51	65	67	123	52	G	87	67	66	59	56	60	76	113	46	54	81
12	70	G	61	59	55	38	49	56	92	153	151	101	138	132		139	100	91		169	141	90	G	36
13	83	54	48	57	G	54	G	59		140	109	136		72	83	56	42	38	43	40	64	27	45	53
14	84	38	36	55	85	134	39	52	66	116	136	92	112	120		40	49	40	44	35	73	109	38	41
15	33	27	26	39	G	58	40	65	68	115	76	96	115		92	65			152	147	47	89	58	54
16	92	43	41	65	41	40	69	64		76	65	71	52	68	47	65	127	130	149	145	149	150	106	36
17	35	83	49	26	G	G	72			70	80	113	53	76	48	58	76	60	61	41	160	51	49	37
18	53	52	40	30	G	35	46	56	60		121	52	48		51	73	80		124	90	94	135	73	48
19	70	38	60	57	39	51	80	94	125	92	93	80	100	46	55	53	79	47	46	50	40		48	58
20	65	57	40	39	40	35	56	72	89	148	50	44	54	52	55	65	66	77	61	35	34	40	56	59
21	46	G	116	40	38	36	53	90	65	74	115	52	58	103	58	74	37	44	66	63	74	94		73
22	55	54	43	41	68	154	125	116	61	84	106	86	108	94	74	57	65	86	84	60	56	71	104	40
23	26	27	G	25	G	32	40	48	52	60	62		80	56	69	60	60	52	52	64	56	68	41	G
24	38	25	23	26	27	33	42	60	53	65	103	92	113		89	57	G	40	51	58	128	54	94	54
25	93	41	49	40	33	70	59	92	95	71	83		76	126	74	71	64	51	56	G	35	33	41	49
26	37	26	G	G	G	G	35	40	46	46	62	70	52	61	48	57	62	81	146	114	84	112	110	48
27	35	35	32	G	G	G	38	52	62	140	95	86	72	80	65	81	39	40	87	41	46	41	27	26
28	G	40	43	59	72	94	130	51	55	60	69	91			110	76	126	131	118	115	28	48	39	109
29	26	71	65	116	44	34	40	66	75	64	113	70	84	56	82		40	45	G	G	G	G	29	40
30	32	38	85	81	115		46	59	46	117	G	G	G	124	46	54		176	92	70	39	39	93	59
31	58	39	58	38	33	32	111	92	84	110	64		G	41	97			55	117	93	42	30	G	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	29	31	30	28	30	31	28	27	26	29	29	28	29	29	31	31	30	30	31
MED	41	38	38	39	33	35	53	59	64	80	76	82	70	68	67	65	64	67	84	64	54	47	46	48
U Q	65	43	49	57	48	52	72	72	86	116	109	94	100	89	79	75	81	93	117	114	94	89	73	59
L Q	32	27	27	25	G	32	40	51	54	65	62	54	52	52	49	56	50	46	54	41	40	39	38	36

HOURLY VALUES OF fmin AT Wakkanai

JUL. 2016

LAT. 45°10.0'N LON. 141°45.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	15	15	15	14	14	16	16	28	28	34	34	29	28	18	21	18	18	14	15	15	16	15	15
2	16	15	15	16	15		17	17	21	29	29	29	28	29	29	20	18	18	16	15	15	15	16	15
3	15	15	14	15	15	14	15	17	17	18	18	18	30	20	21	16	16	15	16	14	14	15	15	14
4	15	14	15	17	14	17	14	15	17	18	29	29	29	20	18	18	17	17		14	15	14	14	15
5	14	15	15	15	14	14	15	18	29	18	34	30		33	18	30	18	17	15	15	15	14	14	15
6	15	15	14	15	17	15	15	15	18	29	30	29	28	18	27	18	16	16	14	15	15	14	16	16
7	15	15	16	16	28	17	14	17	18	18	18	30			24	17	18	18	17	15	15	15	15	17
8	17	16		18	18	21	14	17	17	29	28	30	29	28	29	27	18	15	14	14	15	17	16	15
9	15	15	14	14	14	14	15	15	16	18	30	29	32	18	27	24	18	17	14	14	14	15	14	15
10	15	14	15	15	16	15	15	16	18	30	33	30	32	30	28	27	27	15	14	15	16	14	14	15
11	14	14	15	15	15	17	14	15	18	29	30	29	29	28	28	27	18	15	14	15	17	15	14	15
12	17	15	15	15	14	17	18	18	18	17	28	30	30	30		27	27	17		15	15	15	18	16
13	16	15	15	14	18	17	16	15		27	28	27		28	21	26	17	15	14	14	15	16	14	17
14	15	15	16	15	15	15	15	18	18	29	32	32	29	29		23	28	17	15	14	15	17	15	15
15	14	16	15	15	16	14	14	18	20	30	32	30	17		29	18			14	15	14	15	15	15
16	14	14	14	14	14	14	15	18		30	30	27	30	29	27	20	18	17	14	18	16	15	15	17
17	15	15	17	17	18	17	17			32	32	30	30	29	28	28	20	15	15	15	14	14	14	14
18	14	14	15	14	18	15	15	17	29		29	28	28		26	30	20		14	17	14	15	15	15
19	15	15	15	15	14	15	14	15	16	18	24	20	24	26	24	17	17	14	14	14	15		14	14
20	14	15	14	15	14	14	14	15	17	26	20	26	27	27	17	15	15	14	14	15	15	14	14	14
21	14	14	15	14	15	15	14	15	20	26	27	34	30	27	27	21	15	14	14	14	14	14		14
22	14	14	14	14	14	14	14	16	27	16	27	27	27	27	20	17	18	14	14	14	14	14	14	14
23	15	14	14	14	15	14	14	15	18	18	26		27	27	21	22	16	14	15	14	15	14	14	14
24	14	15	14	15	15	14	14	15	27	17	20	27	22		27	26	20	24	14	14	14	14	14	14
25	14	14	14	14	14	14	14	15	16	15	17		18	20	20	14	15	14	14	14	14	14	14	14
26	14	15	16	14	15	16	14	14	16	18	18	20	28	23	18	15	15	15	14	15	15	14	14	14
27	14	14	15	15	14	21	14	14	15	16	17	18	27	24	17	17	14	14	14	14	14	14	15	15
28	18	14	14	15	14	14	14	14	17	16	17	29			18	16	15	14	14	14	14	14	15	14
29	15	14	15	14	14	14	14	14	15	15	18	28	17	20	16		14	14	14	15	15	16	14	14
30	14	14	14	14	14		14	14	15	15	24	28	27	26	18	17		14	14	14	14	14	14	14
31	14	14	14	15	14	14	14	15	15	17	27		27	20	24			14	14	15	15	14	17	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	29	31	30	28	30	31	28	27	26	29	29	28	29	29	31	31	30	30	31
MED	15	15	15	15	15	15	14	15	18	18	28	29	28	27	24	20	18	15	14	15	15	14	14	15
U Q	15	15	15	15	16	17	15	17	20	29	30	30	30	29	27	26	18	17	14	15	15	15	15	15
L Q	14	14	14	14	14	14	14	15	16	17	20	27	27	20	18	17	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JUL. 2016

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	49	45	A	34	A	46	A	109	78				56	66	62	A	71	66	71		A	A	A
2	A	42	39	42	42	41	51	52	98	114	A		A	A	A	130	148	A	59	58	44	54	54	52
3	51	A	A	A	A	39	A	62	58	A	A	A	A		A	A	57	44	A	A	A	51	A	52
4	52	A	A	A	37	42	36	A	62	A	A	A	A	A	A	A	A	A	A		A	A	A	A
5	A	A	42	A	44	46	47	66	57	A	A	A	A	61	A	61	61	69	62	67	66	52	47	51
6	43	46	44	39	38	42	C	66	47	A	A	A	A	61	61	54	A	A	52	55	68	64	A	52
7	52	48	44	44	44	44	47	A	A	61			A			58	61	A	59	72	64	54	52	54
8	52	52	48	42	46	43	A	A	A	A	A	A	A	A	58	55		47	47	54	64	67	A	52
9	A	48	47	45	50	50	62	A	A	A	A	A	A	A	A	48	A	N	57	53	67	52	52	50
10	A	A	A	44	37	41	50	A	A	A	A	A	A	A	A		A	A	149	A	A	A	47	43
11	44	44	42	42	39	41	45	54	60	A	A	A	68	A	A	63	64	63	62	64	58	48	54	A
12	54	A	51	47	A	46	55	A	39	A	A	A	A	57	66	A	A	A	A	66	72	64	54	63
13	63	51	52	52	44	52	55	46	50	A	A	A	A	A	58	A	A		91	A	62	54	53	48
14	44	44	45	45	44	A	A	A	66	54	A	A		62	61	65	60	44	66	73	A	A	54	66
15	A	55	52	55	55	56	57	46	A	A	A	A		A	A	59	67	64	99	A	A	A	A	54
16	52	52	A	46	44	A	A	62	A	A	A	A	59	A	A	A	A	A	66	73	54	A	54	A
17	52	52	54	54	47	46	54	75	97	A	A	A	A	A	64	67	68	75	73	71	A	A	53	52
18	A	52	49	47	47	34	51	61	A	48	N	A	A	A	58	99	A		A	76	82	54	52	52
19	44	47	44	45	43	44	A	66	63	67	61	64	58	A	N		61	62	75	76	72	A	A	45
20	43	44	44	44	41	C	56	64	67	A	A	A	A	A	A	A	90	96	101	A	82	A	A	A
21	A	52	49	45	45	A	64	67	A	A	A	A		A	A		54	A	57	51	54	58	52	54
22	54	51	44	43	42	38	A	58	63	63	A	59	A	A	114	98	54	58	68	77	80	54	54	50
23	52	53	51	44	46	39	89	A	A	A	A	A	A		62	68	72	A	71	80	74	64	66	53
24	64	A	A	42	43	39	A	A	A	A		A	A	A	A	A	A	A	54	A	A	52	52	52
25	46	40	43	38	37	41	47	A	104	A	109	A	A	68	72	A	72	66	61	67	66	55	N	65
26	62	52	54	54	52	A	45	A	A	A	54	A	A	59	A		A	A	52	52	55	24	A	49
27	44	49	48	46	44	A	A	A	A	A		A	100	A	A	A	A	61	65	66	55	44	42	42
28	49	40	33	36	A	A	42	51	59	47	A	A		57	57	59	66	68	75	67	67	46	54	54
29	45	A	A	42	41	A	38	60	A	A	A	N	A	A	A	59	72	87	80	66	45	44	50	44
30	46	45	47	A	A	44	47	58	63	A	A	A	A	66	62	A	A		67	71	61	52	49	A
31	44	A	A	A	A	A	A	A	61	A			A	A	A	61	64	64	57	67	65	53	43	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	23	24	25	26	21	21	17	18	8	3	2	4	9	13	17	17	16	27	24	23	22	21	24
MED	50	49	46	44	44	42	50	61	62	62	61	62	64	61	62	61	64	64	66	67	65	54	52	52
U Q	52	52	50	46	46	46	55	66	67	72	109	64	84	64	66	67	72	70	75	72	72	55	54	54
L Q	44	44	44	42	41	40	45	53	58	51	54	59	58	57	58	58	60	59	57	61	55	51	49	49

HOURLY VALUES OF fEs AT Kokubunji

JUL. 2016

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	30	38	63	50	42	37	97	79	108	G	G		G	68	G	57	50	87	30		67	67	84
2	72	40	48	33	26	27	32	G	89	110	63		57	65	130	96	157	148	155	48	34	32	27	53
3	34	72	83	59	71	37	66	48	57	83	86	72	85		60	46	52	55	97	128	94	45	73	51
4	50	46	49	46	36	G	49	73	70	136	88	162	69	66	67	60	62	73	80		85	112	81	92
5	87	81	36	70	33	33	33	G	50	59	49	50	79	43	52	51	53	44	33	29	39	29	G	45
6	29	36	32	26	29	31	C	50	55	64	70	119	95	54	G	G	51	77	44	40	45	35	68	30
7	58	50	41	G	G	29	43	55	72	73			50			G	G	58	36	31	G	28	45	53
8	33	24	27	G	29	32	39	46	51	70	78	50	72	46	G	41	G	51	51	31	26	G	69	49
9	56	26	26	23	28	51	56	50	71	112	122	133	57	70	69	50	54	53	52	40	36	33	41	35
10	54	73	68	37	24	29	36	65	57	137	82	77	78	101	72		51	131	131	170	69	59	40	35
11	37	28	29	25	G	29	47	51	58	86	97	55	75	85	73	44	G	40	36	35	35	44	58	73
12	58	67	73	49	57	49	57	55	G	49	53	59	46	45	G	74	71	65	87	51	60	55	46	53
13	58	33	25	G	G	G	G	G	G	57	76	75	126	66	57	69	59		97	110	53	43	31	28
14	93	34	70	41	36	61	59	49	51	61	45	43	G	G	G	G	51	56	57	58	93	85	56	57
15	94	40	33	31	25	G	35	68	55	70	60	81		49	82	57	G	71	69	84	92	59	59	72
16	50	58	93	48	71	65	111	55	53	46	48	59	G	78	51	55	83	77	54	45	72	106	68	73
17	50	41	34	G	G	31	44	54	89	90	51	108	83	71	60	48	54	55	58	68	93	67	49	69
18	69	39	29	42	37	33	52	48	99	50	70	80	66	70	G	84	139		169	56	50	39	55	33
19	28	33	26	G	G	34	80	41	43	53	49	G	G	48	52	G	49	51	43	67	79	88	90	36
20	46	43	34	36	34	C	33	37	48	116	82	67	80	100	84	81	45	80	105	130	116	114	85	72
21	55	38	36	37	48	89	65	68	138	118	69	64		50	53	G	52	52	49	29	32	34	35	29
22	G	24	22	33	27	27	58	39	G	G	42	G	45	65	118	108	46	52	37	41	29	27	29	46
23	29	32	49	41	35	32	79	65	114	106	164	136	101	G	G	G	56	64	61	69	83	53	49	60
24	78	83	67	34	24	35	82	82	135	81	G	48	52	72	88	67	65	77	54	64	70	49	34	49
25	39	29	24	G	G	G	37	80	75	123	122	137	60	50	60	69	43	54	49	47	43	32	35	57
26	57	35	30	36	26	33	35	46	51	43	G	62	113	G	79		72	87	54	25	37	29	67	34
27	57	46	34	73	33	92	107	93	61	64	G	87	97	77	70	61	61	79	49	43	38	36	G	G
28	29	33	33	47	37	38	G	41	G	G	50	50	G	G	G	G	G	35	40	G	G	29	26	27
29	34	83	70	34	39	70	86	50	69	60	71	89	122	58	51	G	51	61	76	57	37	33	G	G
30	27	34	46	40	50	34	34	51	48	151	158	137	88	60	65	80	82		49	35	29	45	45	49
31	49	58	60	93	87	46	58	59	71	60	G	G	48	50	59	56	44	36	29	36	48	34	35	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	30	29	28	29	30	29	31	28	31	30	30	31	31	31
MED	50	39	36	36	33	33	48	51	57	70	66	67	70	58	60	51	52	57	54	46	46	43	46	49
U Q	58	58	60	47	39	46	65	65	75	110	82	98	86	70	72	69	62	77	87	67	79	59	67	60
L Q	34	33	29	25	24	29	35	46	50	57	48	50	49	45	51	G	45	51	44	35	35	32	34	34

HOURLY VALUES OF fmin AT Kokubunji

JUL. 2016

LAT. 35°43.0'N LON. 139°29.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	13	13	13	13	14	17	17	24	18		46	29	23	18	13	13	13		13	13	13
2	13	13	13	13	13	13	13	13	15	14	31		37	30	22	21	14	13	13	13	13	13	13	13
3	13	13	13	13	13	13	13	13	17	22	33	33	38		35	21	13	13	13	13	14	13	13	13
4	13	13	13	13	13	18	13	13	13	22	29	30	26	26	26	17	18	14	13		13	13	14	14
5	13	13	13	13	13	13	13	13	15	18	34	38	38	44	17	33	29	15	13	13	13	13	17	13
6	14	13	13	13	13	13	C	14	17	20	21	28	26	23	28	22	17	13	13	13	13	13	13	13
7	13	13	13	13	13	13	13	14	18	18			38			45	18	17	13	13	13	14	13	13
8	13	14	13	13	13	13	13	13	20	21	39	36	30	34	22	33	14	14	13	13	14	13	13	13
9	13	13	13	14	13	13	13	13	17	17	20	34	36	36	30	18	18	15	13	13	14	13	13	13
10	13	13	13	13	13	13	13	13	18	34	38	36	35	33	33		28	15	13	14	14	13	15	13
11	13	13	13	14	14	13	13	15	14	17	29	31	34	34	30	21	18	13	13	13	13	13	14	13
12	13	13	13	14	13	13	13	13	15	20	21	36	30	38	48	34	18	13	13	13	13	13	14	13
13	13	14	13	13	15	20	13	13	18	17	31	34	30	29	28	21	18		13	13	13	13	13	14
14	13	13	13	14	13	13	13	17	15	20	22	25	24	47	48	20	17	18	13	13	14	15	14	13
15	13	13	13	13	13	13	13	13	20	20	20	39		37	37	22	18	13	13	13	13	13	13	13
16	13	13	13	13	13	13	13	13	15	21	33	35	50	28	23	22	14	14	13	14	13	14	13	13
17	13	13	13	13	13	13	14	13	17	29	22	21	34	29	23	21	17	15	13	13	13	13	13	13
18	13	13	13	13	13	13	13	13	17	31	34	29	25	30	48	37	20		13	13	13	13	13	13
19	13	13	13	13	14	13	13	15	17	21	33	48	48	36	23	18	15	13	13	13	13	13	13	13
20	13	13	13	13	13	C	13	13	18	20	24	25	29	26	21	21	17	13	13	13	14	13	14	13
21	13	13	13	13	14	15	13	14	37	37	37	40		35	33	21	29	17	13	13	13	14	13	13
22	13	13	14	13	14	13	13	14	23	41	31	23	37	28	28	20	23	13	13	13	14	13	13	13
23	13	13	13	13	13	13	13	14	17	21	31	57	35	29	46	46	14	13	14	13	13	13	13	13
24	13	13	13	13	13	13	13	15	15	30	37	34	38	36	34	30	28	17	14	13	13	13	13	13
25	13	14	13	13	13	13	13	14	14	36	22	34	22	28	21	20	18	13	14	13	13	13	13	13
26	14	13	13	13	14	13	13	13	14	18	17	22	21	46	59		17	14	13	14	13	13	14	13
27	13	13	13	13	13	13	13	14	14	20	24	34	37	28	20	20	14	15	13	13	13	13	13	14
28	13	13	13	13	13	14	13	13	17	22	21	23	20	20	21	17	17	13	13	14	13	13	14	13
29	13	13	13	13	13	13	15	13	13	22	20	36	25	34	20	20	13	14	13	14	13	13	14	14
30	14	13	13	13	15	13	13	13	14	20	18	29	29	26	20	33	13		13	13	13	14	13	14
31	14	13	13	13	14	13	13	13	17	20	20	28	30	36	20	20	15	14	13	13	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	30	29	28	29	30	29	31	28	31	30	30	31	31	31
MED	13	13	13	13	13	13	13	13	17	20	26	34	32	33	28	21	17	14	13	13	13	13	13	13
U Q	13	13	13	13	14	13	13	14	18	22	33	36	37	36	34	31	18	15	13	13	13	13	14	13
L Q	13	13	13	13	13	13	13	13	15	18	21	26	26	28	21	20	14	13	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

JUL. 2016

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	44	45	41	42	34	A	A	60	63	59	54	A		56	A	63	70	A	72	64	54	51	43	44
2	43	A	A	A	A	A	54	64	A		A	A		A		A	59	59	58	55	34	54	62	52
3	52	52	52	A	50	44	57	51	58	A	A	A	A	A	A	A	A	A	A	A	A	A	46	41
4	A	A	A	38	34	36	47	51	45	52	A	58	A	59	65	60	54	A	55	67	A	54	A	A
5	A	A	A	A	46	41	46	55	60	A	A	A	A	A	A	A	A	78	78	72	A	A	47	46
6	45	42	40	37	34	38	56	48	A	A	A	61	A	A	62	55	A	A	A	A	76	60	51	51
7	34	42	42	A	A	36	40	50	60	A	61	A	A	A	A	61	64	72	A	80	A	50	47	A
8	42	48	54	A	44	48	44	A	A	A	A	A	A	A	64	B	A	A	A	A	A	54	63	52
9	54	51	54	44	47	51	A	A	A	A	A	A	A	A	A	A	A	A	A	54	67	54	51	A
10	48	51	51	A	44	40	46	A	A	A	A	109	A	A	A		60	A	67	A	58	54	54	67
11	52	53	52	47	38	38	48	50	57	A	A	A	A	A	A	A	A	71	76	78	44	A	47	44
12	38	A	46	53	46	47	52	54	A	A	A	A	65	65	69	77	A	72	75	78	A	A	A	A
13	A	A	61	62	60	58	56	48	57	67	A	A	A	A	A	68	A	A	A	A	72	47	54	54
14	51	51	47	47	45	37	A	52	74	55	A	A	A	68	66	67	66	59	48	74	61	52	A	54
15	53	52	51	58	56	45	47	A	A	A	A	A	A	A	A	A	A	64	52	A	A	52	52	49
16	46	46	48	44	45	40	48	52	53	A	A	A	A		A	67	75	74	68	71	72	A	A	73
17	53	75	76	67	54	52	54	77	61	54	A	A	A	59	61	77	84	82	78	74	52	A	A	54
18	51	52	54	44	45	42	50	60	A	A	A	A	A	A	A	A	A	119	A	86	65	A	52	54
19	63	52	58	50	45	44	47	58	51	59	59		A	A	A	58	66	77	84	85	71	42	A	A
20	42	42	44	45	40	32	44	58	58	63	62	67	A	A	74	72	84	91	93	88	86	52	42	A
21	A	A	A	40	A	42	45	69	75	77	68	A	A	A	A	A	59	A	67	61	61	60	52	48
22	48	50	42	42	40	40	44	57	67	57	60	56		B	61	A	63	71	80	84	83	51	B	45
23	46	48	47	45	46	40	A	50	A	A	A	B	A	A	A	A	72	73	75	66	74	51	51	52
24	53	54	55	53	55	A	44	46	46	50		A	A	A	A	A	A	A	57	A	A	51	52	47
25	52	51	48	44	34	34	48	51	52	A	A	A	A		A	78	76	72	66	71	73	67	62	52
26	52	54	60	54	50	44	A	A	47	A	A	49		A	A	A	54	51	58	A	A	64	51	A
27	51	52	48	47	51	42	40	45	A	A	N	A	A	60	A	A	A	66	74	72	A	A	A	42
28	40	A	40	A	A	34	44	55	47	56		A	A			66	70	78	79	76	71	52	54	47
29	40	42	29	29	30	29	46	38	A	A	A	40	A	A	58	64	78	86	90	88	54	43	45	44
30		42	50	A	59	30	41	60	57	A	A	A	58	76	78	70	76	84	81	77	48	43	44	42
31	A	40	41	37	34	A	A	60	47	A	A	A		A		63	59	70	74	78	77	49	32	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	27	23	27	27	25	26	20	11	6	7	2	7	10	16	19	21	24	23	21	23	23	24
MED	48	51	48	45	45	40	47	53	57	57	60	58	62	60	64	66	66	72	74	74	67	52	51	48
U Q	52	52	54	53	50	44	51	60	60	63	62	67	65	68	69	71	76	80	78	80	73	54	54	53
L Q	42	43	42	42	38	36	44	50	49	54	59	49	58	59	61	62	59	68	62	67	54	50	46	44

HOURLY VALUES OF fEs AT Yamagawa

JUL. 2016

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	33	G	32	39	30	82	66	37	59	56	44	59	G	G	70	40	62	61	40	26	25	30	G	33
2	59	58	40	59	53	60	52	49	61	G	47	49	G	55	G	50	50	49	35	49	40	28	25	57
3	46	33	34	60	54	72	30	43	63	60	85	80	83	67	58	56	56	76	76	78	82	69	48	45
4	67	89	78	32	28	G	30	51	42	51	50	G	82	G	G	G	50	62	53	47	85	59	69	125
5	83	79	94	90	80	50	39	G	40	53	48	66	65	63	73	72	81	60	70	28	53	59	39	45
6	34	39	27	35	31	G	35	48	52	134	119	G	64	50	51	50	154	131	96	72	36	49	40	47
7	49	40	50	55	64	G	35	54	50	76	57	79	64	56	62	G	G	43	82	43	85	23	34	57
8	31	58	G	55	33	25	33	50	54	60	58	75	57	67	49	B	80	104	155	118	92	43	38	35
9	40	29	33	33	24	24	39	49	58	67	97	92	150	90	78	68	126	96	85	32	34	34	29	28
10	40	46	34	78	54	38	28	54	69	79	56	120	76	89	56	G	50	66	45	58	27	45	34	32
11	56	43	36	27	G	G	35	42	51	95	68	113	121	157	88	66	72	54	41	58	55	59	40	36
12	93	59	67	44	34	28	35	51	40	48	60	59	60	54	54	55	56	72	43	58	75	120	82	82
13	84	59	40	35	28	29	27	41	52	56	64	159	58	86	90	84	73	66	76	91	49	31	30	55
14	50	34	48	48	40	56	43	54	61	50	60	52	51	G	G	G	G	42	49	39	50	G	75	48
15	58	32	24	24	G	25	G	46	43	54	73	46	53	46	74	122	82	55	40	46	82	24	G	29
16	25	28	25	G	G	29	34	51	G	53	121	67	120	G	52	G	G	104	36	35	60	50	79	46
17	56	54	29	G	G	G	28	39	49	G	49	56	58	53	53	G	G	G	G	G	40	58	65	43
18	27	G	24	G	G	32	42	46	117	80	129	84	106	119	104	81	90	105	80	35	35	72	54	56
19	35	32	30	G	G	G	G	40	G	40	49	G	48	44	49	G	48	44	40	69	60	32	58	46
20	36	39	45	40	34	52	36	65	49	57	42	56	98	68	48	47	40	G	77	30	24	G	23	39
21	59	49	40	32	36	28	30	44	44	40	50	79	62	72	103	58	G	89	60	40	53	35	33	43
22	G	28	G	G	28	32	35	42	42	48	56	49	G	B	G	46	44	38	44	56	34	26	B	29
23	30	24	25	40	G	G	35	44	116	84	51	B	125	132	100	72	56	61	46	46	25	24	27	34
24	50	51	54	45	36	59	29	39	G	G	G	60	53	59	77	66	60	88	G	93	80	69	34	G
25	27	29	G	G	G	G	G	32	50	51	63	76	77	G	85	64	70	46	39	40	36	49	57	50
26	33	44	30	33	47	36	43	48	G	56	62	G	G	53	86	89	40	41	53	78	56	56	49	57
27	69	36	36	30	36	33	28	42	58	50	47	67	54	62	62	89	78	56	78	56	78	79	72	34
28	34	56	G	46	52	31	32	G	41	47	G	48	54	G	G	G	G	45	64	35	34	46	38	28
29	G	G	G	G	25	G	G	36	62	58	52	174	102	58	43	43	G	G	G	33	26	G	G	G
30	G	31	40	40	28	32	29	36	36	69	57	70	G	G	78	G	G	40	38	35	38	28	29	49
31	58	34	48	33	52	54	52	57	57	54	74	57	G	42	G	G	G	44	42	29	44	50	33	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31	30	31	31	31	31	31	31	30	31
MED	40	39	34	35	31	29	34	44	50	54	57	63	60	56	58	50	50	56	46	46	49	45	38	43
U Q	58	54	45	46	47	50	39	51	59	67	68	79	83	68	78	68	73	76	76	58	75	59	57	50
L Q	31	29	25	24	G	G	28	39	41	48	49	49	51	42	48	G	G	43	40	35	34	28	29	32

HOURLY VALUES OF fmin AT Yamagawa

JUL. 2016

LAT. 31°12.0'N LON. 130°37.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	15	15	14	14	15	14	15	15	17	18	21	30	49	36	46	17	14	15	17	15	14	15	15
2	14	14	14	14	14	15	15	14	15	20	23	22	26	35	71	21	18	16	14	14	14	15	24	14
3	14	15	16	15	15	14	15	14	14	16	24	22	33	21	34	34	20	14	14	14	15	14	14	14
4	14	14	14	14	14	14	14	14	15	18	33	46	29	28	18	23	18	16	14	14	15	14	15	14
5	15	15	14	14	14	14	15	14	16	20	18	27	35	35	35	33	21	17	14	14	14	15	14	14
6	14	15	14	15	15	16	14	14	16	17	20	32	30	21	27	20	18	17	14	14	15	14	14	15
7	14	15	14	15	18	15	14	14	16	18	20	33	35	33	32	48	20	28	15	14	15	15	15	14
8	14	15	15	14	14	14	14	14	17	18	28	34	29	27	34	B	21	17	14	14	14	15	14	14
9	14	15	14	14	15	15	14	20	16	21	34	34	34	34	22	20	21	17	14	14	14	14	14	14
10	14	14	14	14	14	15	15	14	22	23	39	35	35	34	36	20	33	16	16	14	15	15	15	15
11	14	14	14	14	14	14	17	15	18	20	33	32	33	32	29	26	20	16	14	14	14	14	14	15
12	15	14	15	15	14	14	14	14	16	17	22	27	27	24	26	22	18	18	17	14	14	14	14	14
13	14	14	14	14	15	15	16	14	15	21	18	34	30	27	28	23	16	17	14	15	14	15	15	15
14	14	14	14	15	14	15	15	14	14	17	21	29	28	28	21	22	21	15	14	14	15	15	14	14
15	14	14	15	15	15	15	17	14	18	21	21	23	38	27	28	21	18	17	15	14	14	16	16	15
16	14	14	16	14	18	14	14	15	18	18	28	30	32	66	23	27	20	17	14	15	15	14	14	15
17	16	14	15	14	15	14	14	14	17	20	21	29	32	30	27	24	18	17	14	17	15	14	15	15
18	15	15	15	22	14	14	15	16	18	27	40	27	34	39	32	28	21	15	15	14	14	14	14	14
19	14	14	14	15	14	14	18	14	17	22	28	28	33	32	32	20	18	14	14	14	15	14	14	14
20	15	15	15	15	14	14	14	14	17	18	20	26	32	35	29	27	21	17	14	14	16	15	15	15
21	15	15	14	14	14	15	15	15	22	24	35	40	38	34	35	27	18	16	14	14	15	14	14	14
22	15	15	15	18	14	14	14	14	18	20	21	27	32	B	49	21	21	16	16	15	14	14	B	14
23	14	15	14	16	14	16	14	15	16	21	28	B	34	29	28	29	21	18	14	15	16	15	14	14
24	14	14	14	14	14	15	16	16	15	17	20	23	36	35	35	21	30	20	16	14	14	15	14	15
25	15	15	15	14	16	14	15	14	18	17	20	32	29	24	29	21	18	15	14	14	14	15	15	14
26	15	14	14	14	14	14	14	14	18	18	17	22	27	27	23	23	17	14	14	14	15	15	15	15
27	15	14	14	15	14	14	14	14	14	17	17	35	28	21	18	17	15	14	14	14	14	15	14	15
28	14	14	15	15	14	14	14	14	15	16	18	39	34	71	22	18	15	14	14	14	14	14	15	16
29	17	14	14	16	15	14	18	15	17	18	18	29	27	29	26	21	18	14	14	14	15	17	14	15
30	81	14	15	15	15	14	14	14	14	20	21	23	48	50	28	21	18	14	14	15	14	15	14	14
31	14	14	15	15	14	14	14	14	14	15	20	21	29	26	21	20	17	14	14	15	15	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31	30	31	31	31	31	31	31	30	31
MED	14	14	14	15	14	14	14	14	16	18	21	29	32	31	28	22	18	16	14	14	15	15	14	14
U Q	15	15	15	15	15	15	15	15	18	21	28	34	34	35	34	27	21	17	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	17	20	23	29	27	23	21	18	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

JUL. 2016

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	42	42	42	34	36	34	41	53	65	A	A	A	A		A	72	78	77	77	77	58	54	42	43
2	41	44	42	36	37	34	A	55	48	52	52	A	A	B	A	64	60	58	53	63	71	67	58	61
3	52	52	52	50	47	40	42	40	A	A	A	A	64	A	A	61	66	54	69	58	51	A	40	39
4	40	A	39	A	30	32	41	A	54	51	A	A	A	A	75	66	65	61	64	62	67	46	A	44
5	A	A	A	A	41	34	45	58	56	A	A	A	A	A	A	A	81	90	90	85	66	A	A	44
6	41	41	37	36	34	34	41	46	A	45	54	A	A	A	A	A	A	60	72	84	87	54	46	A
7	42	42	41	40	35	B	40	58	A	61	A	A	A	A	70	A	72	80	82	86	A	A	A	38
8	42	44	39	A	A	44	45	46	A	A	B	A	A	A	68	62	A	A	A	A	A	A	67	54
9	54	53	64	54	46	38	40	A	46	A	A	A	A	A	A	A	A	A	66	A	67	54	54	51
10	48	42	52	A	A	37	48	57	51	A	A	A	A	63	65	65	76	82	72	70	72	67	67	71
11	65	52	52	55	48	44	48	44	44	A	A	A	A	A	A	72	A	88	87	82	73	58	52	51
12	38	44	A	45	42	34	48	74	51	52	A	61	66	67	77	78	74	82	88	85	72	73	67	52
13	52	51	58	61	66	42	45	57	60	62	57	61	A	71	72	76	75	83	87	88	A	54	51	54
14	42	52	51	51	45	40	44	70	65	A	A	A	64	72	78	81	80	76	78	81	A	54	52	54
15	52	61	58	60	54	47	54	53	A	60	A	A	A	A	A	75	78	A	A	A	A	50	52	53
16	51	51	49	47	45	39	44	51	57	A	57	A	64	A	60	78	86	A	72	A	A	A	75	86
17	80	72	78	62	54	52	62	71	62	59	60	A	60	A	66	86	94	82	88	81	60	53	51	52
18	52	52	54	48	46	42	47	57	64	61	62	B	63	66	74	78	81	87	A	A	A	66	61	60
19	67	71	70	66	52	45	45	58	56	58	A	A		A	A	59	75	84	88	88	A	A	A	44
20	44	46	54	46	39	B	40	57	64	A	68	A	A	61	84	78	86	105	92	88	81	44	26	42
21	B	42	41	41	A	A	A	64	62	70	68	A	67	70	70	73	77	87	87	82	72	67	60	42
22	52	50	52	44	38	30	44	54	61	67	54	A		B	B	68	76	80	89	105	86	52	50	48
23	43	44	48	47	46	40	42	A	46	50	A	A	A	52	A	A	A	81	78	81	74	54	47	42
24	42	42	44	45	47	A	50	51	57	A		A	60	60	A	A	A	A	77	63	58	52	A	51
25	51	48	51	47	42	44	61	48	43	A	A	A	A	A	74	78	82	A	76	83	78	74	52	53
26	52	60	52	54	50	44	44	53	54	57	C	56	62	61	62	57	A	A	56	58	A	61	A	54
27	A	50	A	51	50	29	40	42	51	56	A	A	A	A	A	A	76	85	93	88	68	A	48	A
28	44	42	44	36	34	30	38	47	51	54	50	A	A	A	B	70	80	85	90	84	77	67	A	51
29	50	42	40	30	29	26	42	45	46	A	A	A	A	A	65	72	76	90	97	88	62	41		44
30	40	41	42	A	A	A	A	57	60	A	A	57	A	80	82	85	91	105	87	82	58	47	37	40
31	A	34	A	34	30	28	A	60	57	48	A	A	A	A	54	62	71	80	88	107	67	40	A	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	29	27	26	27	26	27	28	26	17	10	4	9	11	17	24	24	24	28	26	22	24	22	29
MED	48	46	51	47	45	38	44	54	56	57	57	59	64	66	70	72	76	82	84	82	70	54	52	51
U Q	52	52	54	54	48	44	48	58	61	61	62	61	65	71	76	78	81	87	88	88	74	66	60	54
L Q	42	42	42	40	36	34	41	47	51	51	54	56	61	61	65	64	74	78	72	77	62	51	47	42

HOURLY VALUES OF fEs AT Okinawa

JUL. 2016

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	49	G	32	59	23	28	40	36	60	72	48	46	G	54	65	54	G	36	G	29	26	43	27
2	39	49	93	49	25	69	68	48	37	57	46	48	63	B	51	53	50	G	40	28	57	27	43	46
3	G	G	34	26	84	35	30	36	59	81	59	70	70	78	54	57	43	41	34	27	40	43	32	40
4	36	59	83	106	73	36	38	87	107	G	52	49	60	60	58	46	49	53	51	40	43	27	78	58
5	83	81	82	59	38	34	31	40	45	72	46	46	52	60	51	72	51	61	51	35	52	34	34	27
6	36	27	G	44	30	24	G	39	47	48	44	94	65	95	64	75	62	44	37	60	60	67	50	84
7	48	39	47	40	36	B	39	53	103	67	128	64	68	56	60	73	62	50	45	38	113	74	27	G
8	49	58	49	59	59	36	36	37	52	55	B	64	74	60	59	G	68	137	88	94	93	69	60	33
9	G	G	G	28	G	G	G	50	42	50	57	65	164	113	109	100	106	102	78	69	40	38	44	G
10	G	35	50	59	48	G	41	48	44	67	95	52	64	50	G	58	G	42	57	40	28	26	28	29
11	36	28	G	G	G	G	G	38	45	50	114	68	92	95	84	64	95	72	50	49	46	30	G	44
12	57	49	50	46	86	49	35	N	51	46	61	58	58	58	56	75	G	41	36	33	34	58	41	58
13	38	32	45	27	46	32	G	54	58	60	52	54	68	54	57	52	58	40	57	71	54	53	46	36
14	48	35	G	44	40	G	30	39	41	60	62	51	60	G	48	43	45	50	48	53	70	28	26	G
15	35	45	36	32	G	45	G	38	93	66	81	63	43	64	74	62	85	74	95	104	59	55	49	46
16	39	34	26	G	38	23	53	35	44	68	44	54	54	65	G	G	79	92	48	112	78	104	73	54
17	30	49	34	80	59	36	33	64	G	48	54	48	G	49	46	42	58	G	38	G	40	G	G	G
18	29	G	G	G	G	26	G	45	60	58	50	B	50	G	50	59	70	83	124	117	93	67	49	43
19	36	G	G	G	26	44	G	32	44	41	47	45	G	51	70	G	47	76	54	25	58	73	55	58
20	33	48	36	30	31	B	32	52	79	56	78	116	91	56	58	51	57	41	46	55	34	39	28	36
21	B	G	G	44	40	60	58	G	52	50	52	80	68	75	52	G	G	36	41	52	58	34	32	25
22	24	G	G	G	G	G	G	36	42	43	52	57	G	B	B	G	G	38	G	34	24	28	G	G
23	G	G	26	26	G	G	29	68	39	44	57	57	74	54	114	108	87	55	48	50	57	53	G	G
24	34	38	41	30	40	60	33	40	52	38	G	49	50	52	62	60	72	75	38	27	26	28	49	26
25	26	23	37	G	G	G	27	38	47	58	78	116	59	60	55	48	61	89	68	47	57	51	G	49
26	32	31	34	38	61	31	26	34	42	G	C	54	52	54	56	47	77	77	44	50	70	59	58	29
27	70	48	50	33	35	G	G	39	39	56	66	48	50	78	146	112	46	51	78	50	78	67	58	77
28	34	41	36	G	G	25	34	35	41	44	44	58	84	57	B	53	52	55	56	G	G	G	59	39
29	35	G	G	G	G	23	G	G	35	84	65	61	87	124	58	44	G	40	33	G	G	G	G	G
30	G	G	49	38	25	34	39	35	41	49	58	52	49	58	G	G	G	G	G	40	G	28	G	37
31	48	33	36	G	G	G	60	68	41	49	48	50	54	48	51	50	G	40	45	29	28	G	34	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	29	31	30	31	31	29	30	31	29	29	31	31	31	31	31	31	31	31	31
MED	35	34	36	32	35	26	30	39	44	55	57	56	60	58	56	53	54	50	48	40	52	38	41	36
U Q	39	48	49	44	48	36	38	50	52	60	69	64	70	70	63	65	70	75	57	55	60	59	50	46
L Q	26	G	G	G	G	G	G	36	41	46	47	49	50	51	51	43	43	40	38	28	29	27	26	G

HOURLY VALUES OF fmin AT Okinawa

JUL. 2016

LAT. 26°41.0'N LON. 128°09.0'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	15	15	14	14	14	15	17	18	26	28	30	71	36	28	22	17	16	16	14	15	15	15
2	15	15	14	14	14	14	16	14	15	21	28	24	29	B	34	28	30	16	14	14	15	15	14	15
3	15	18	15	16	16	14	14	14	15	22	26	27	29	29	30	30	32	17	14	14	14	14	14	14
4	15	14	14	14	14	15	15	15	16	20	27	30	30	32	29	28	21	17	14	14	14	14	14	14
5	15	14	15	15	16	14	17	15	16	20	23	29	29	36	35	34	18	20	15	14	14	16	14	14
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18	16	21	17	18	15	15	14	16	23	28	36	B	34	101	36	28	24	20	17	14	14	14	14	14
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21	B	16	16	14	14	14	14	15	20	30	34	43	38	38	34	50	23	17	14	14	14	14	15	15
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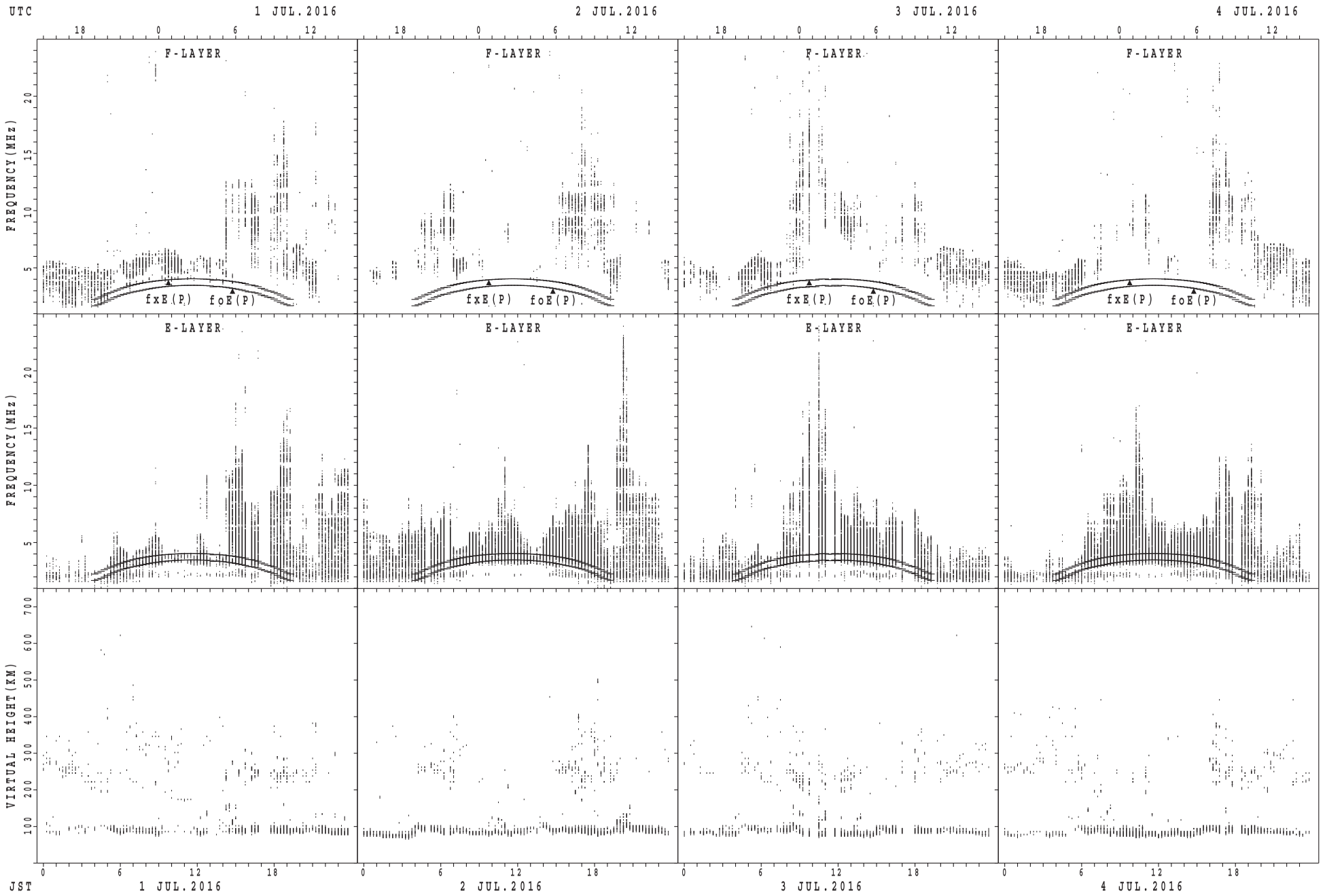
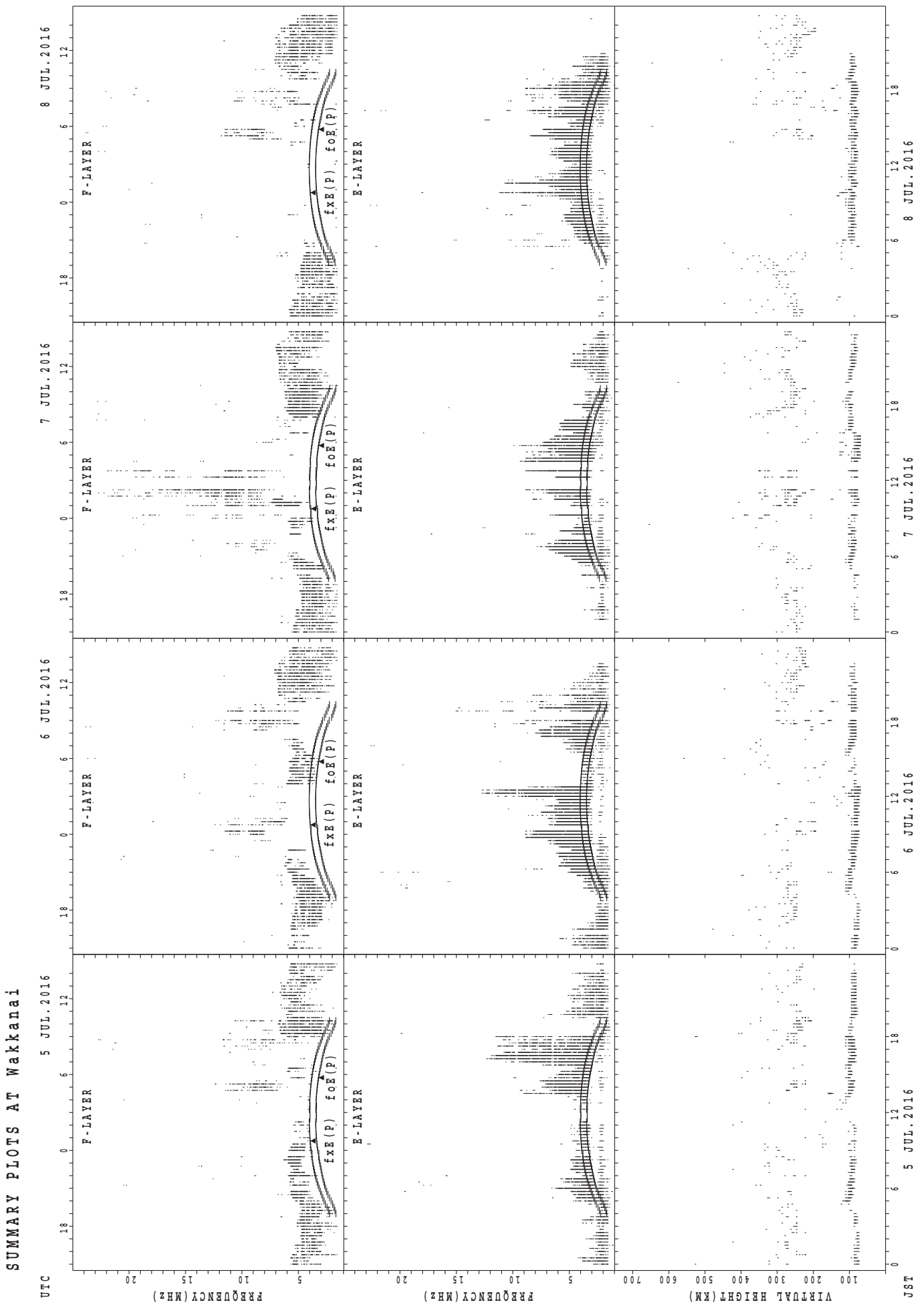
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	29	31	31	31	31	29	30	31	29	29	31	31	31	31	31	31	31	31	31
MED	14	15	15	15	15	14	15	14	17	20	28	30	33	35	34	30	22	17	14	14	14	15	14	15
U Q	15	16	15	16	16	15	17	15	18	22	33	34	35	38	36	36	24	20	15	14	15	15	15	16
L Q	14	14	14	14	14	14	14	14	16	20	26	28	30	29	29	26	20	16	14	14	14	14	14	14

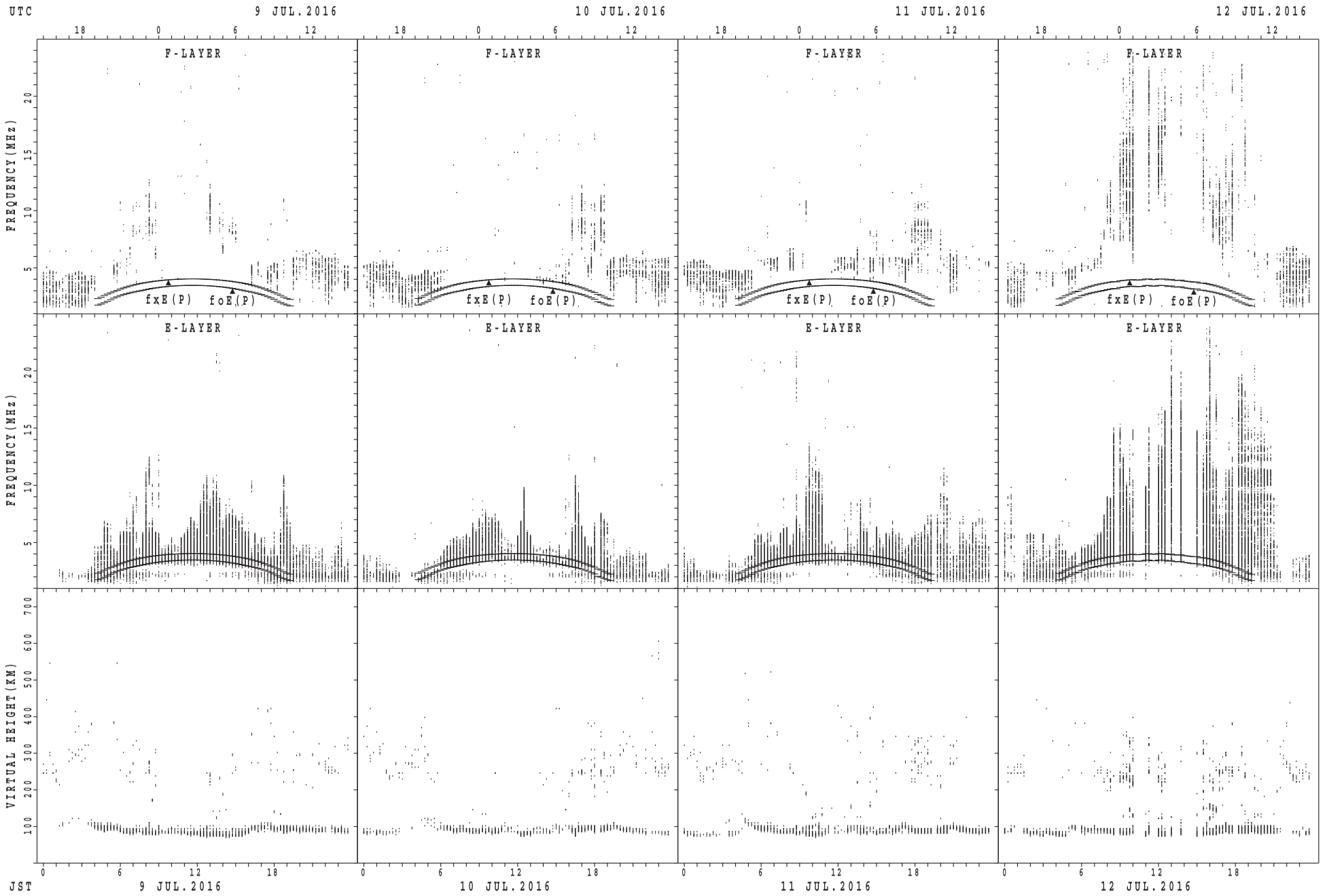
SUMMARY PLOTS AT Wakkanai



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

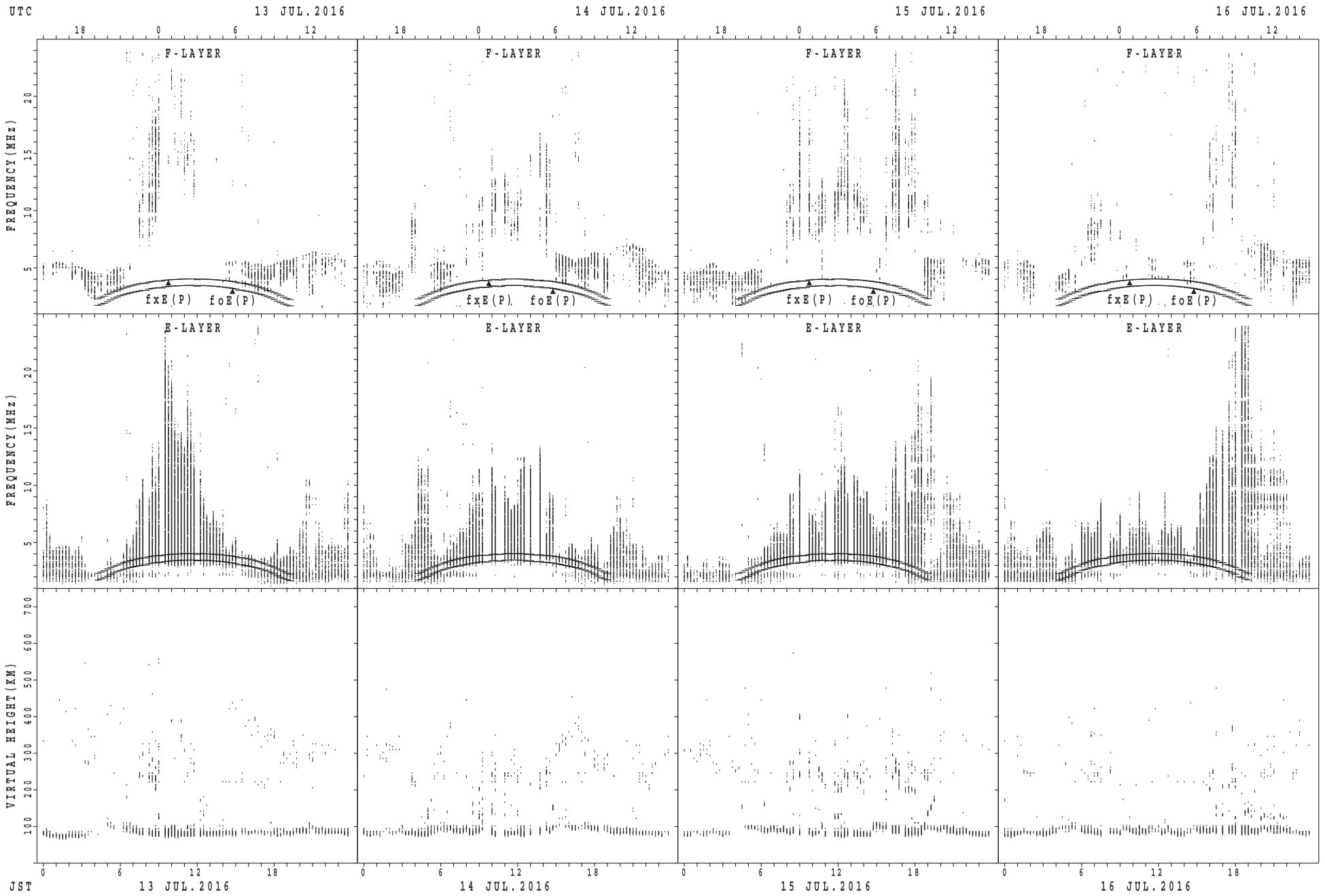

SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUL.2016
6 JUL.2016
7 JUL.2016
8 JUL.2016
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



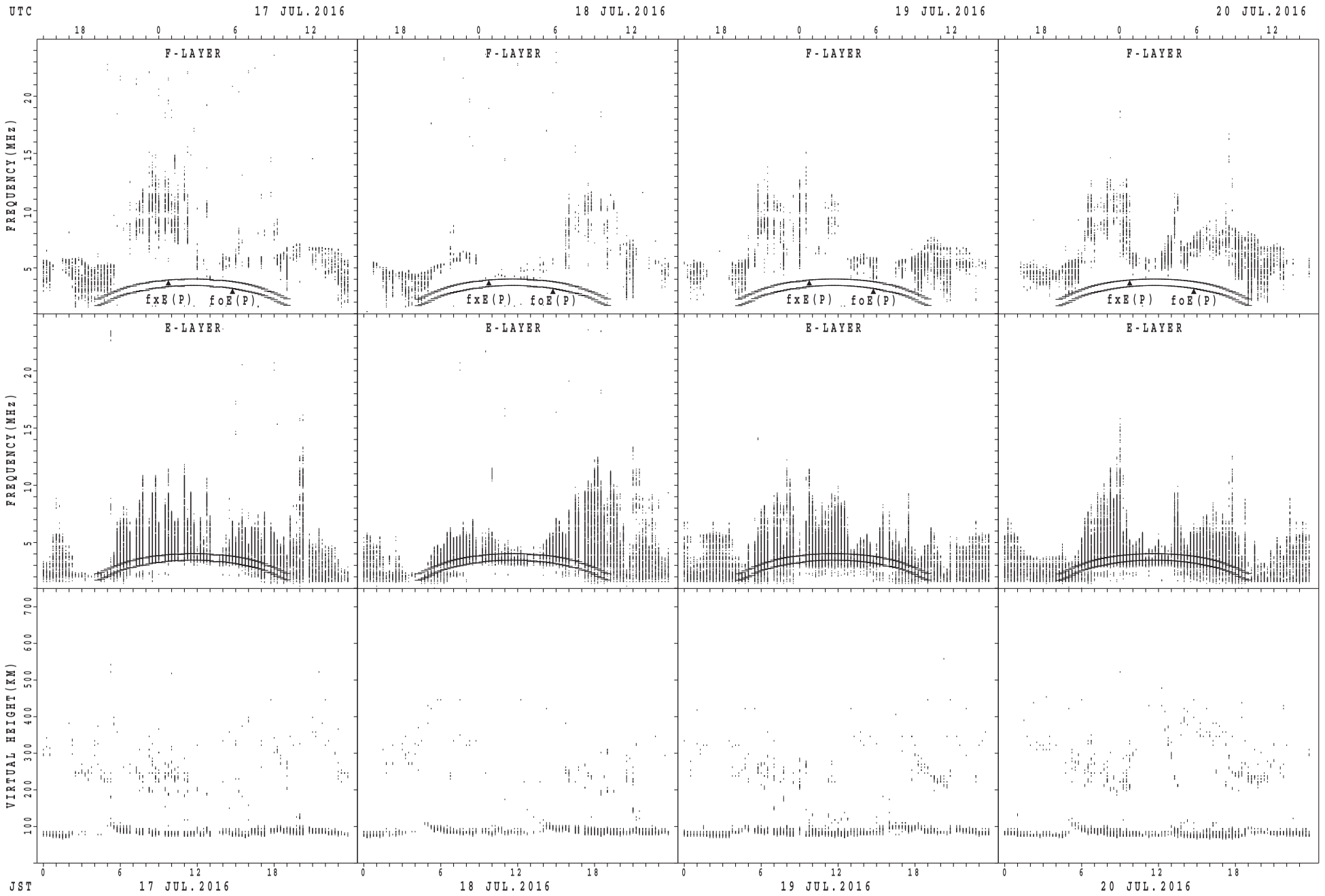
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



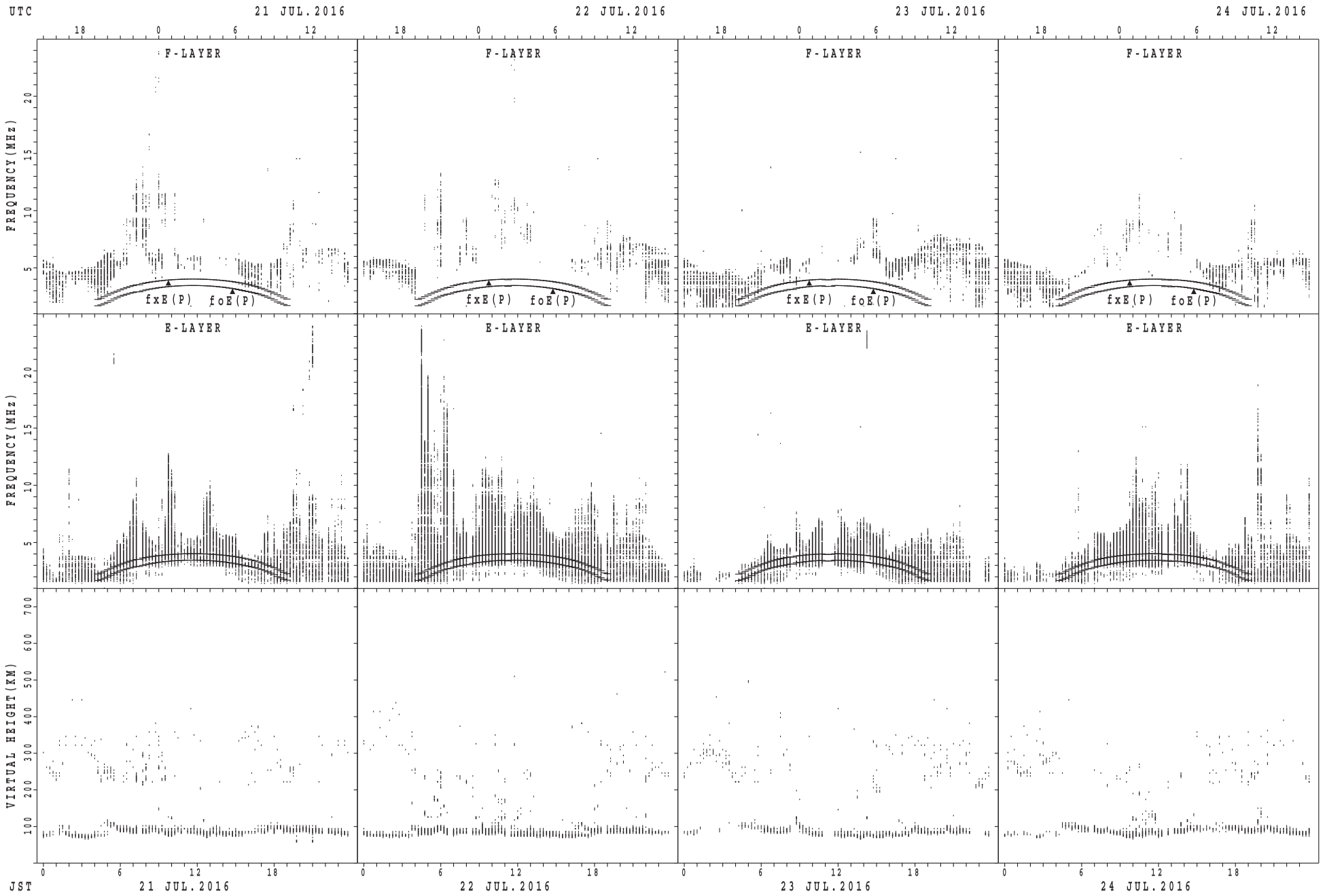
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

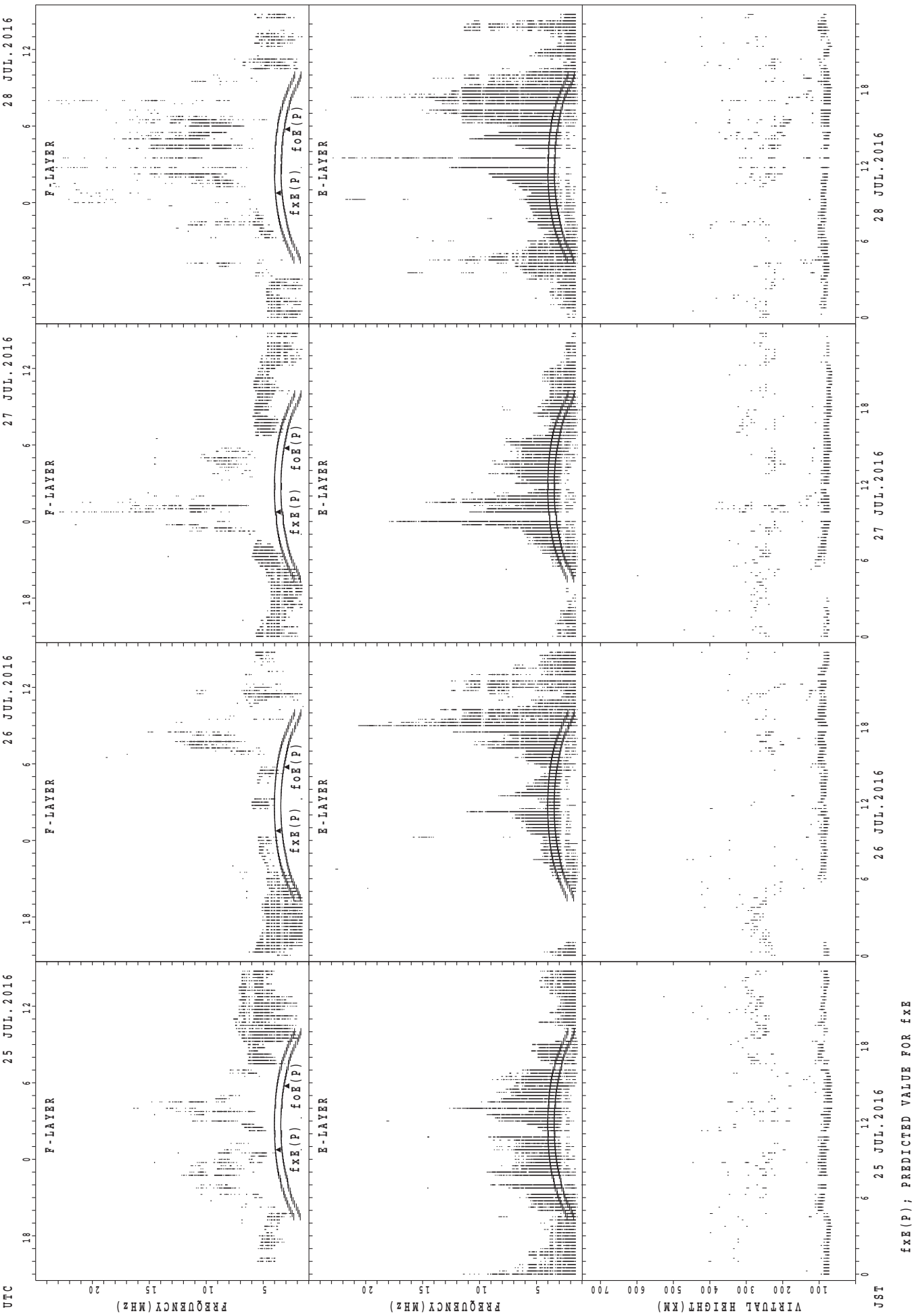


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

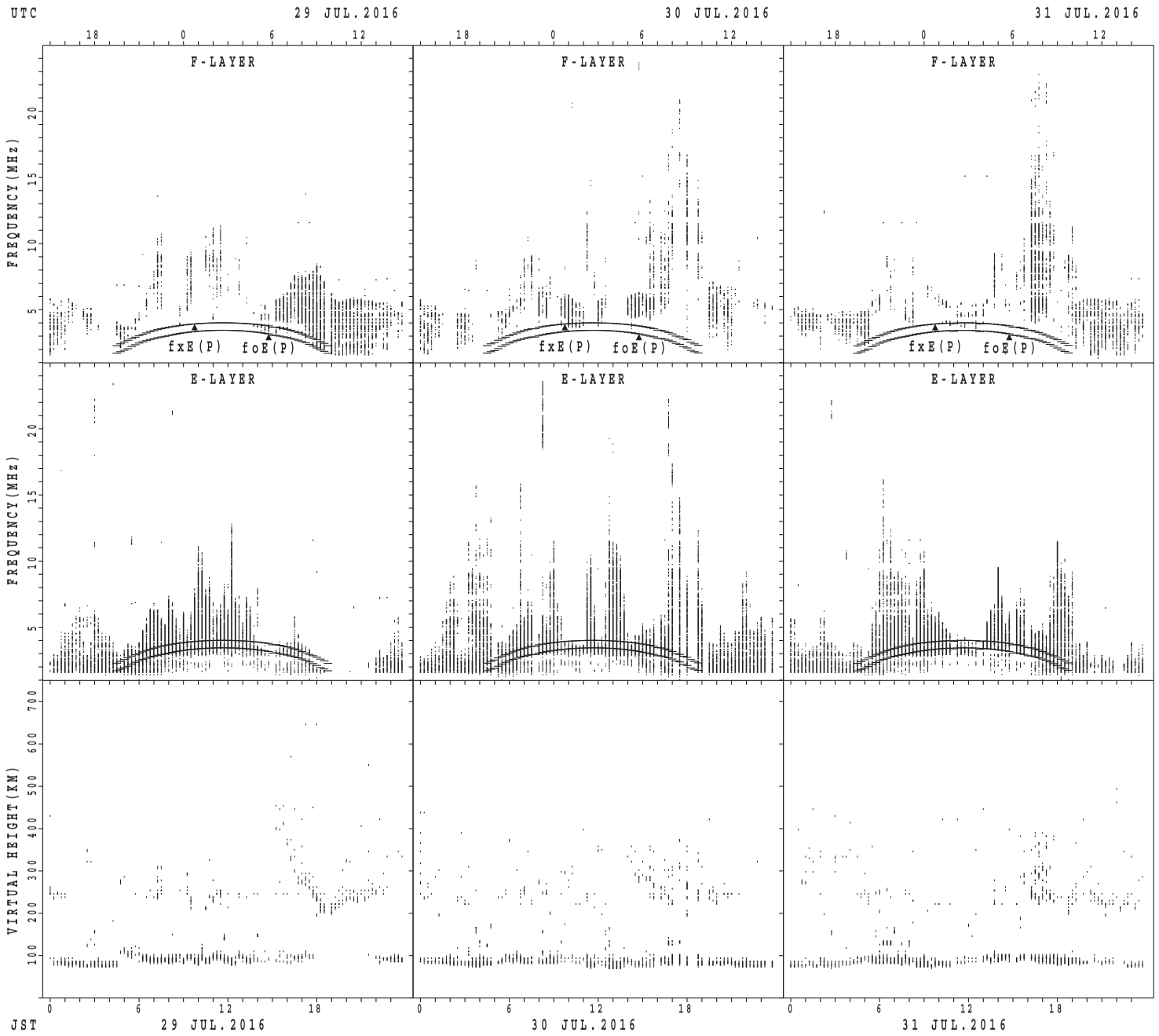
SUMMARY PLOTS AT Wakkanai



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

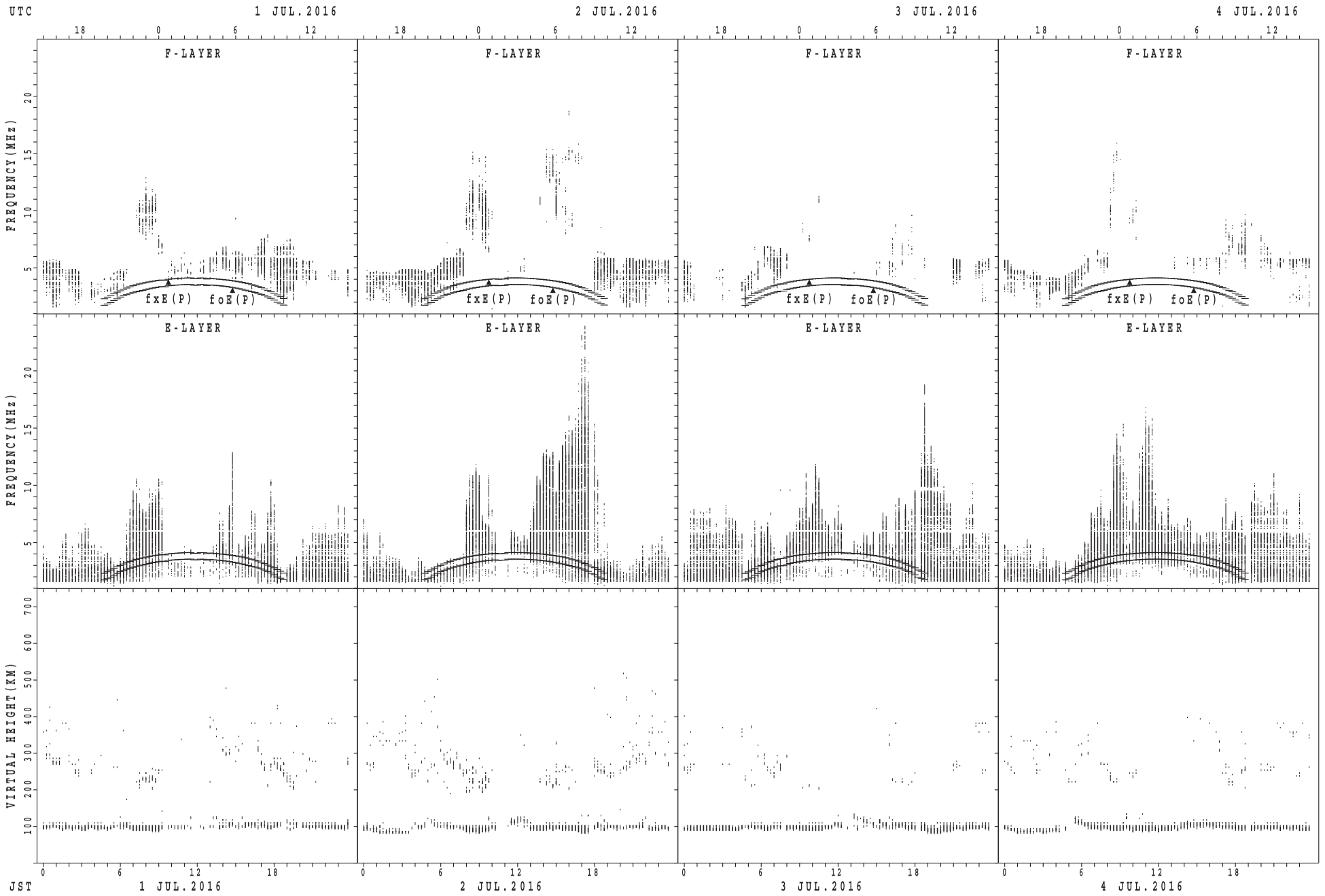

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 JUL.2016
26 JUL.2016
27 JUL.2016
28 JUL.2016
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



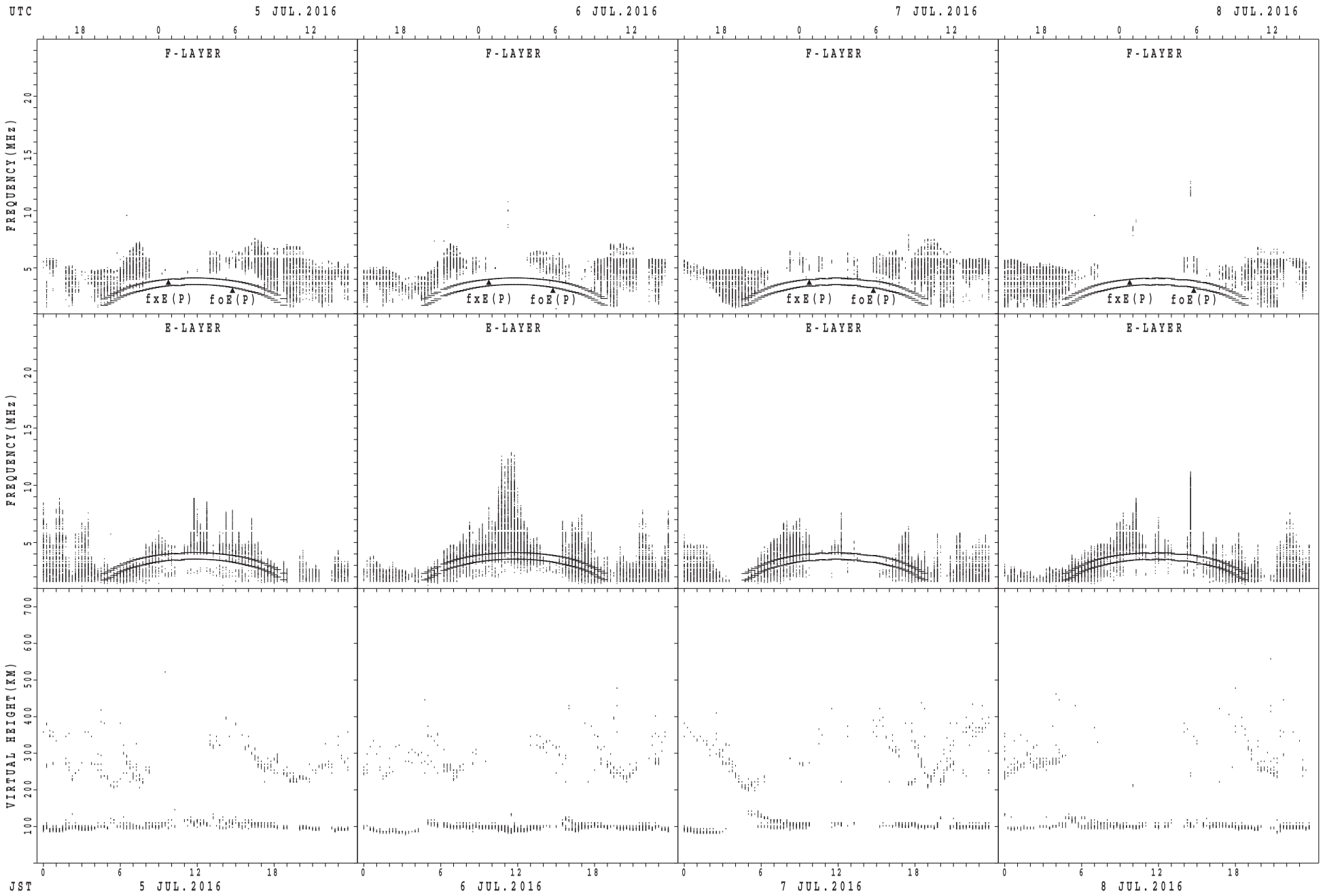
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



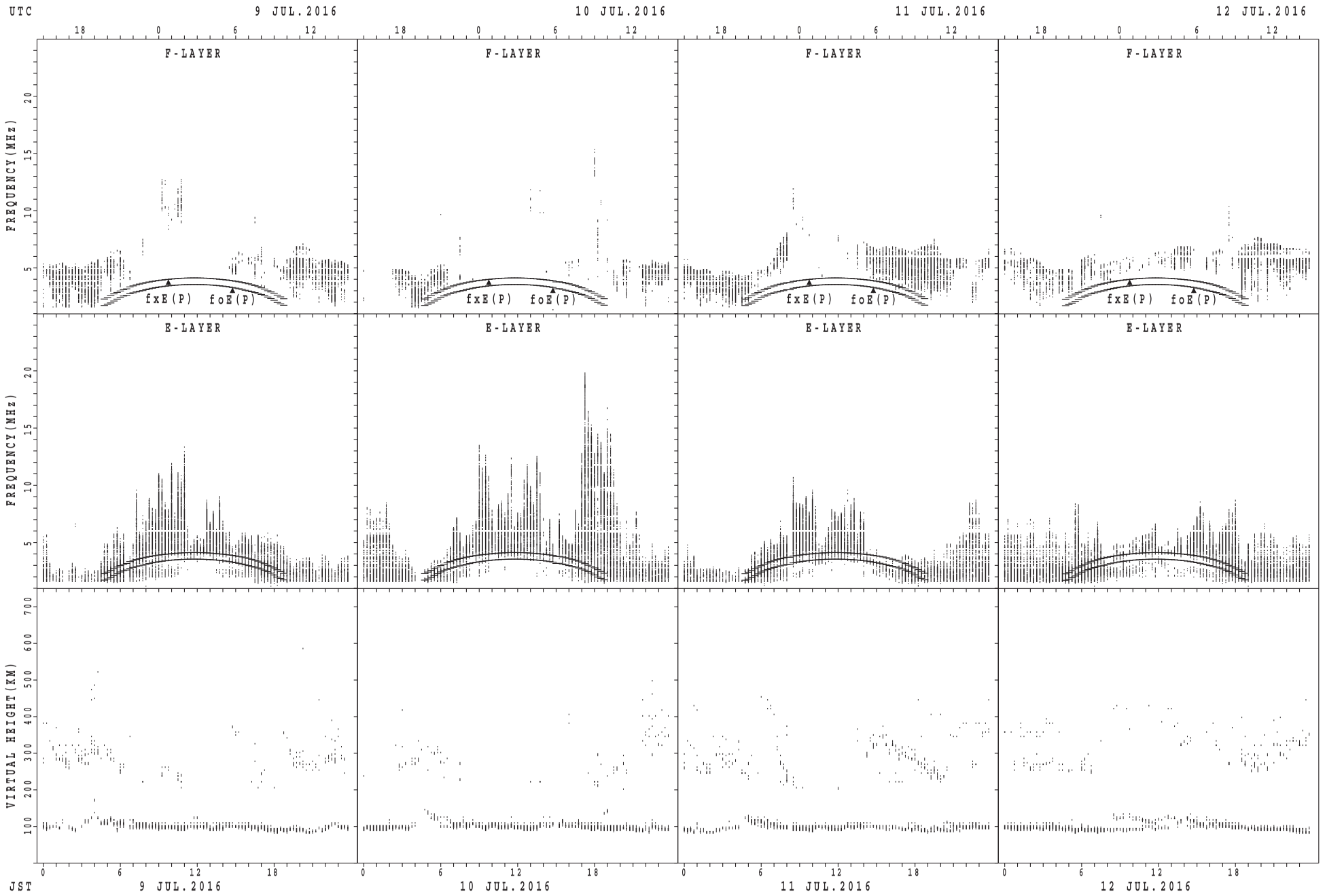
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



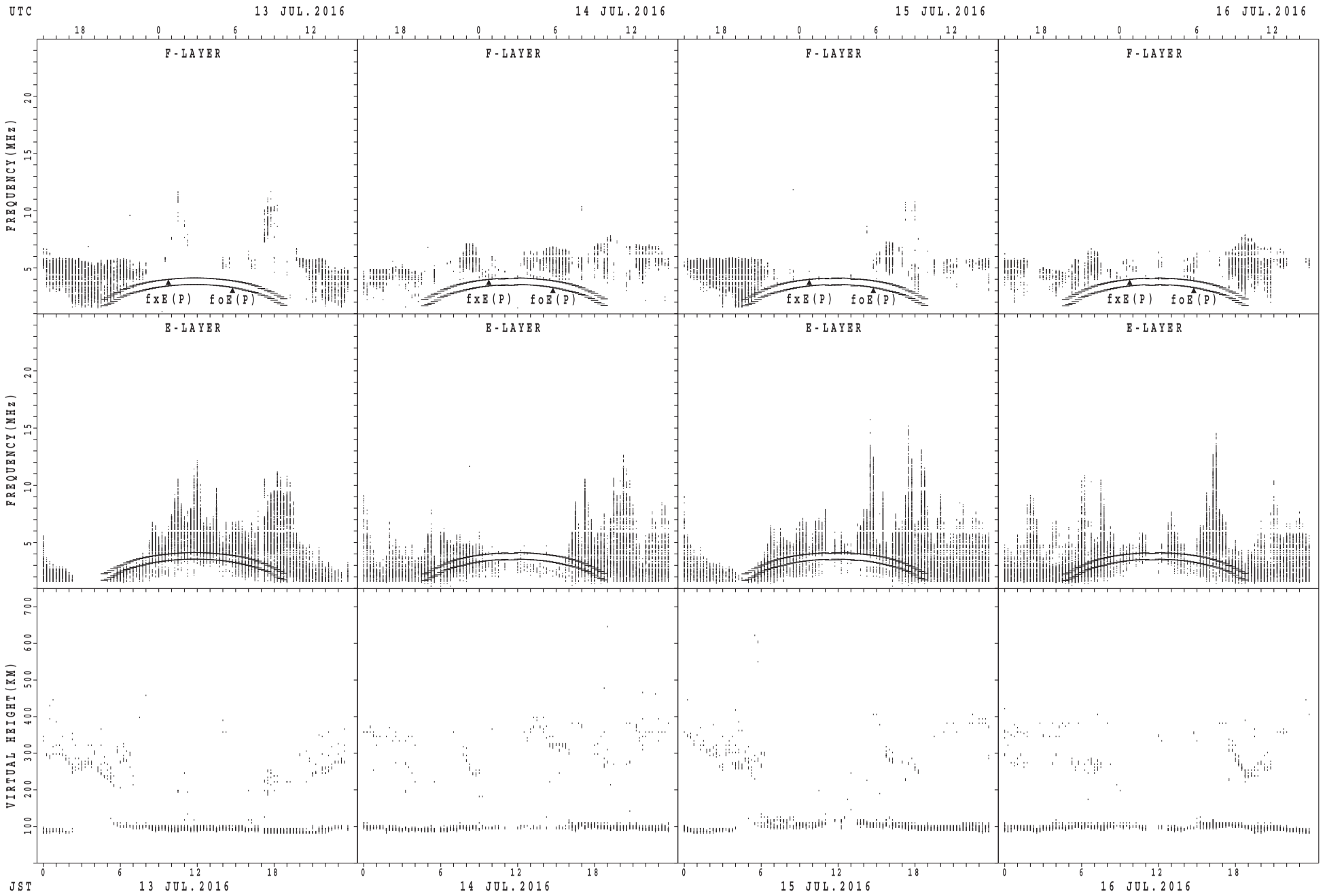
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

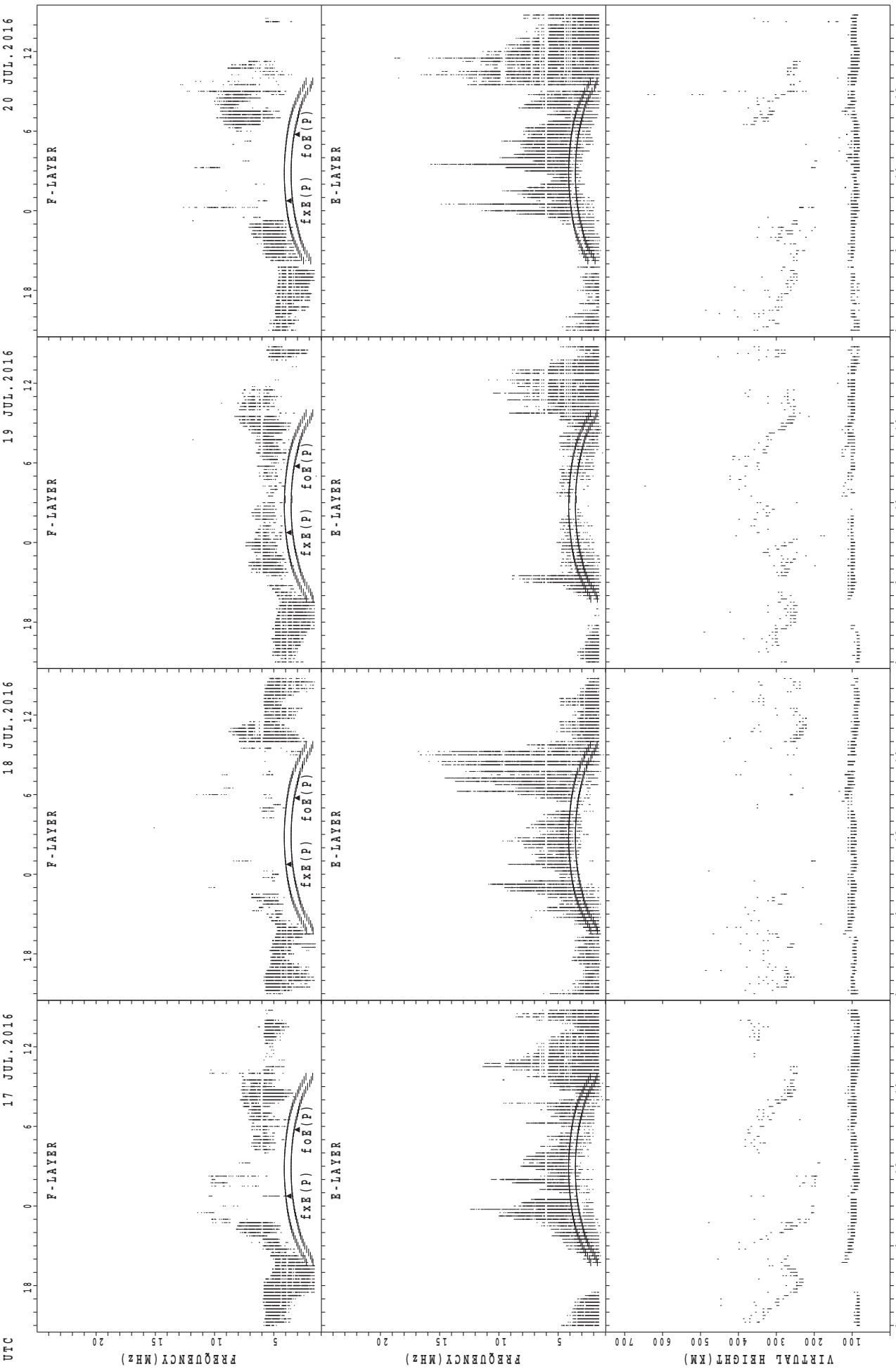


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

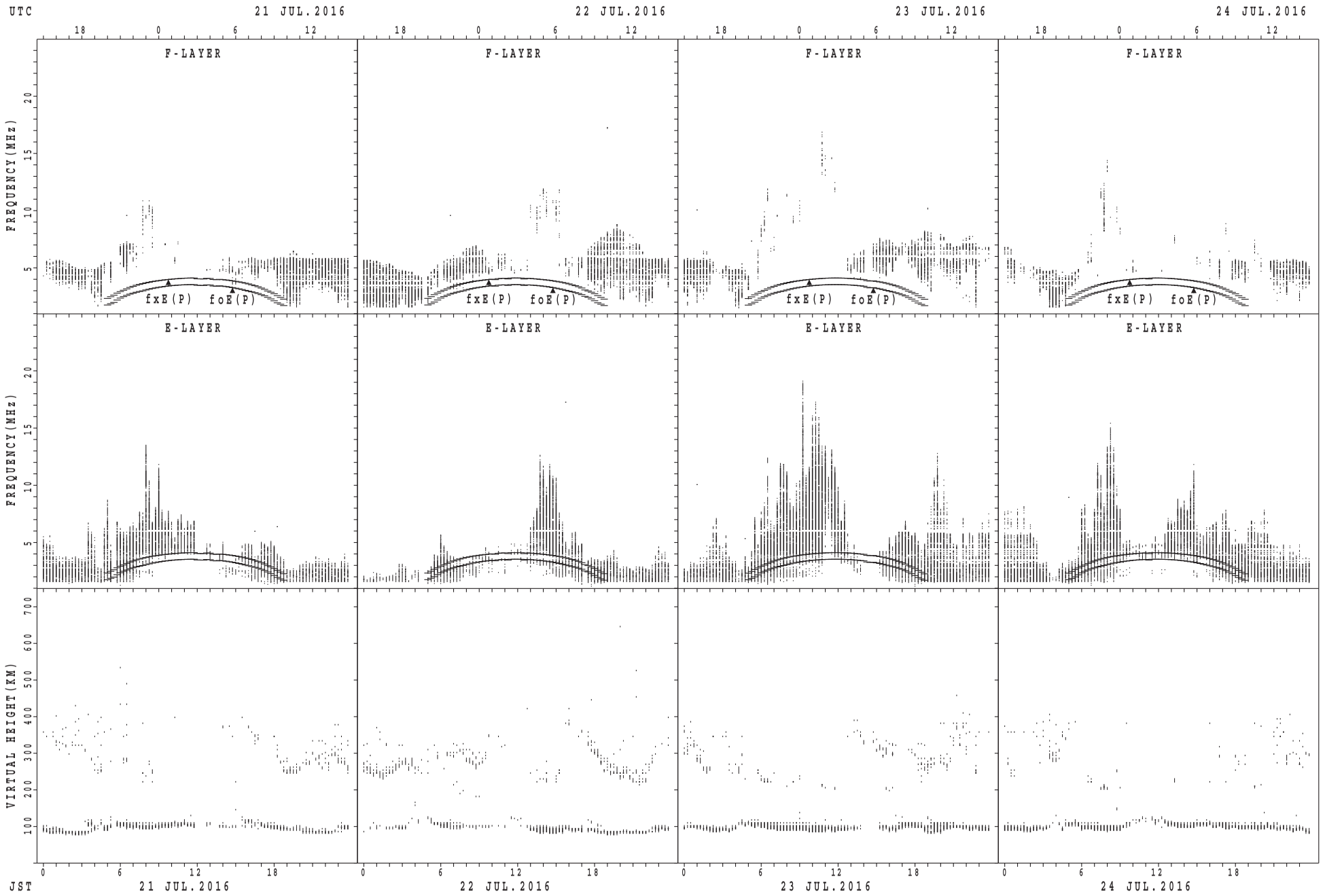
SUMMARY PLOTS AT Kokubunji



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

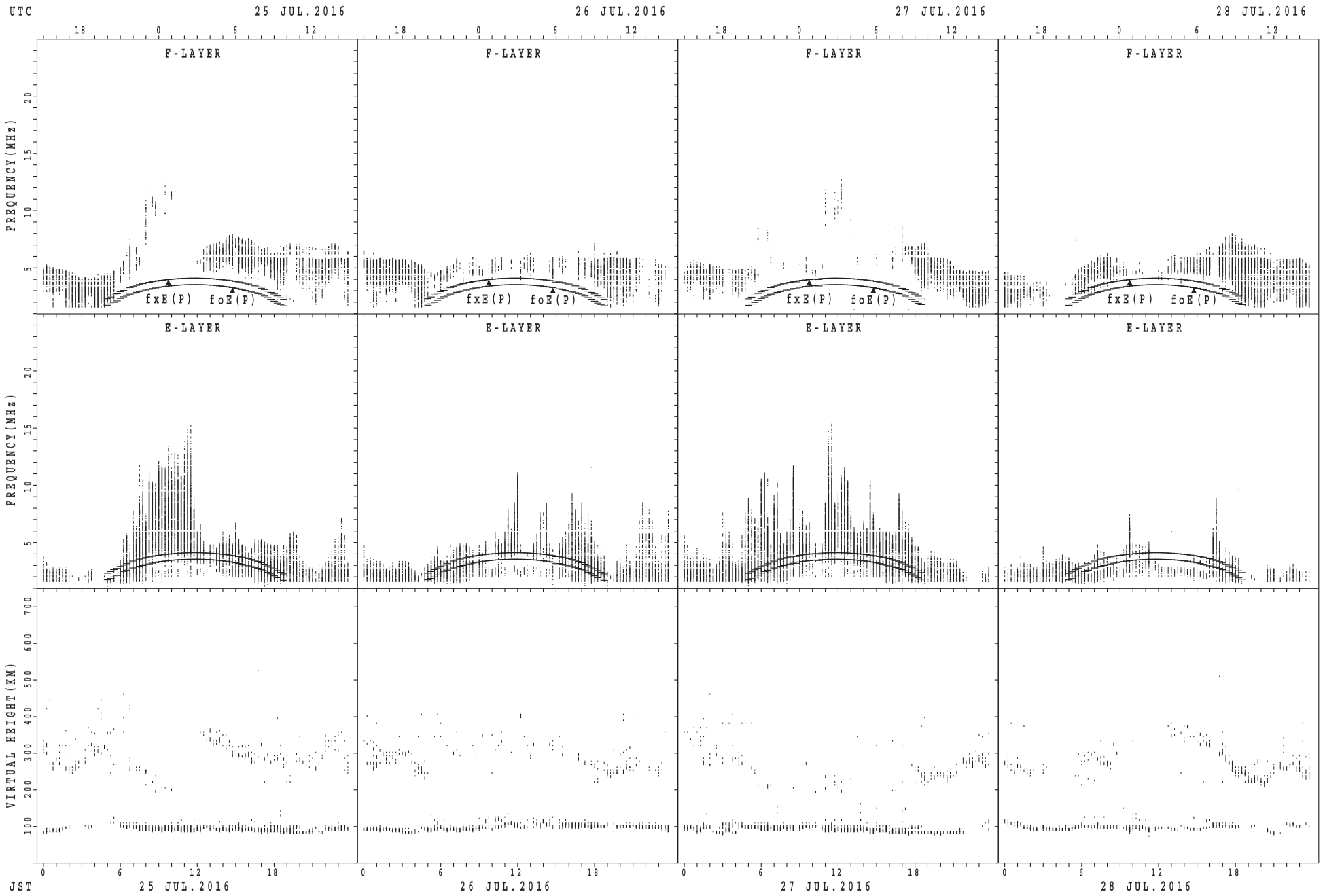

SUMMARY PLOTS AT Kokubunji
UTC
JST
17 JUL.2016
18 JUL.2016
19 JUL.2016
20 JUL.2016
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



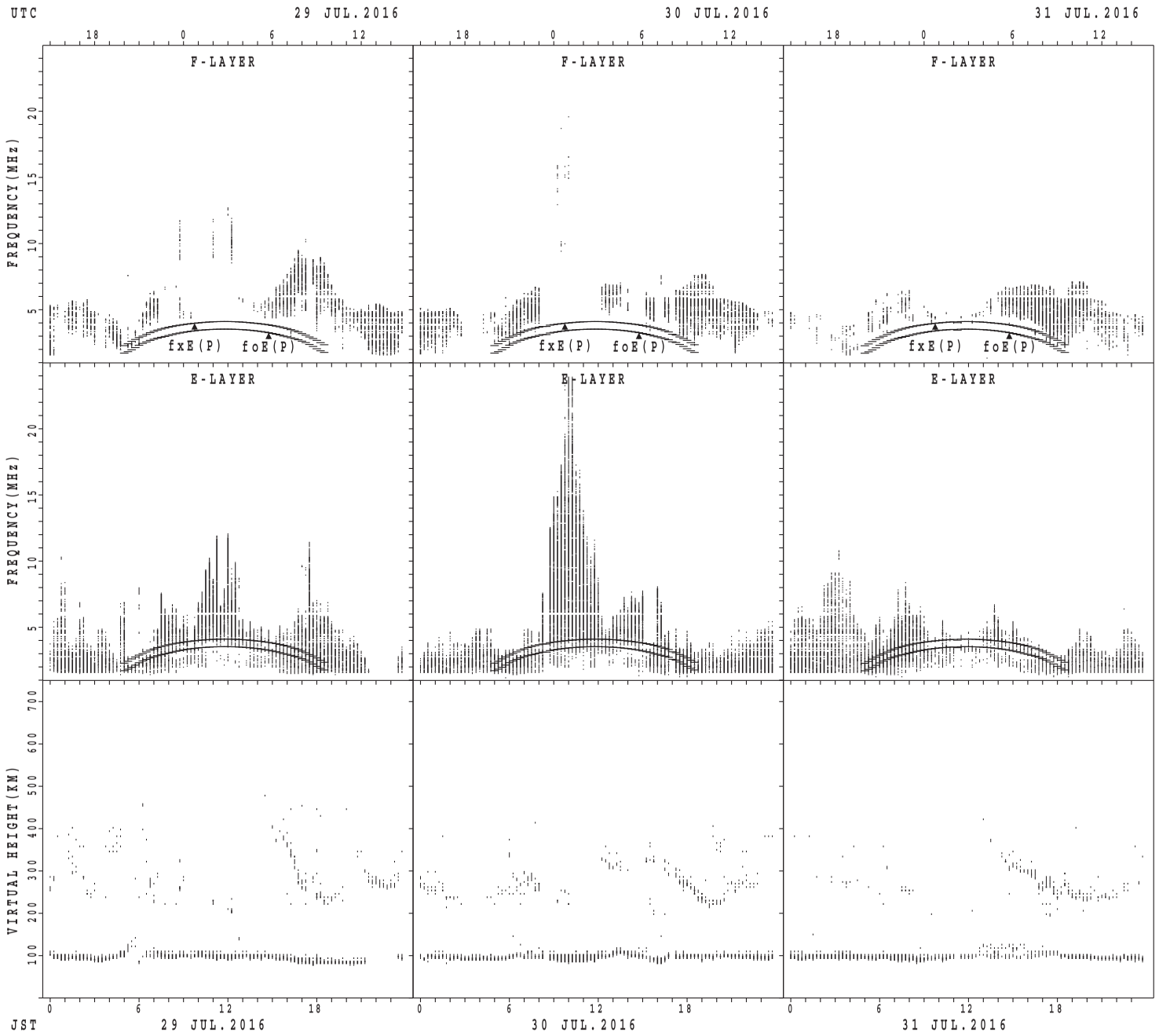
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



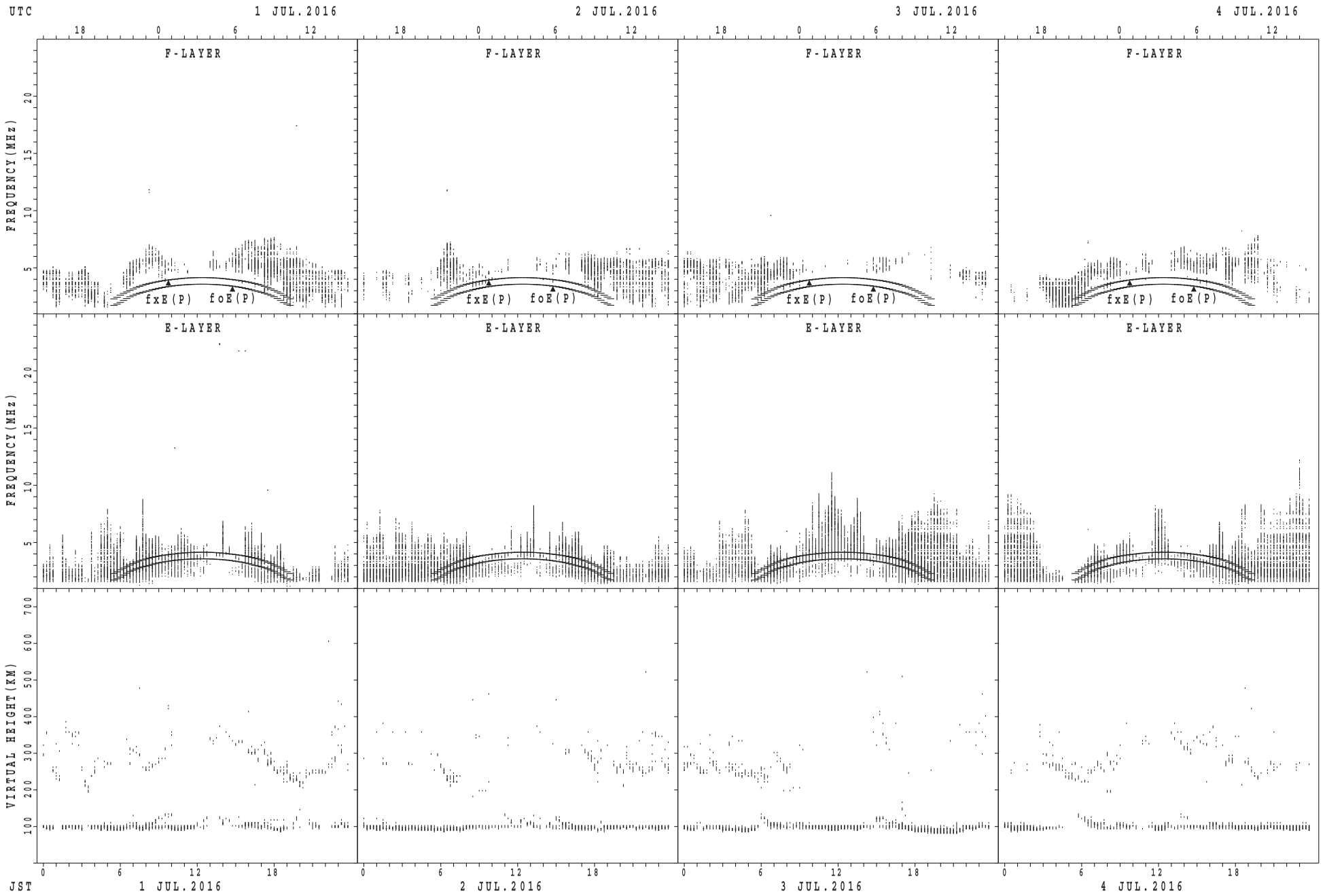
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



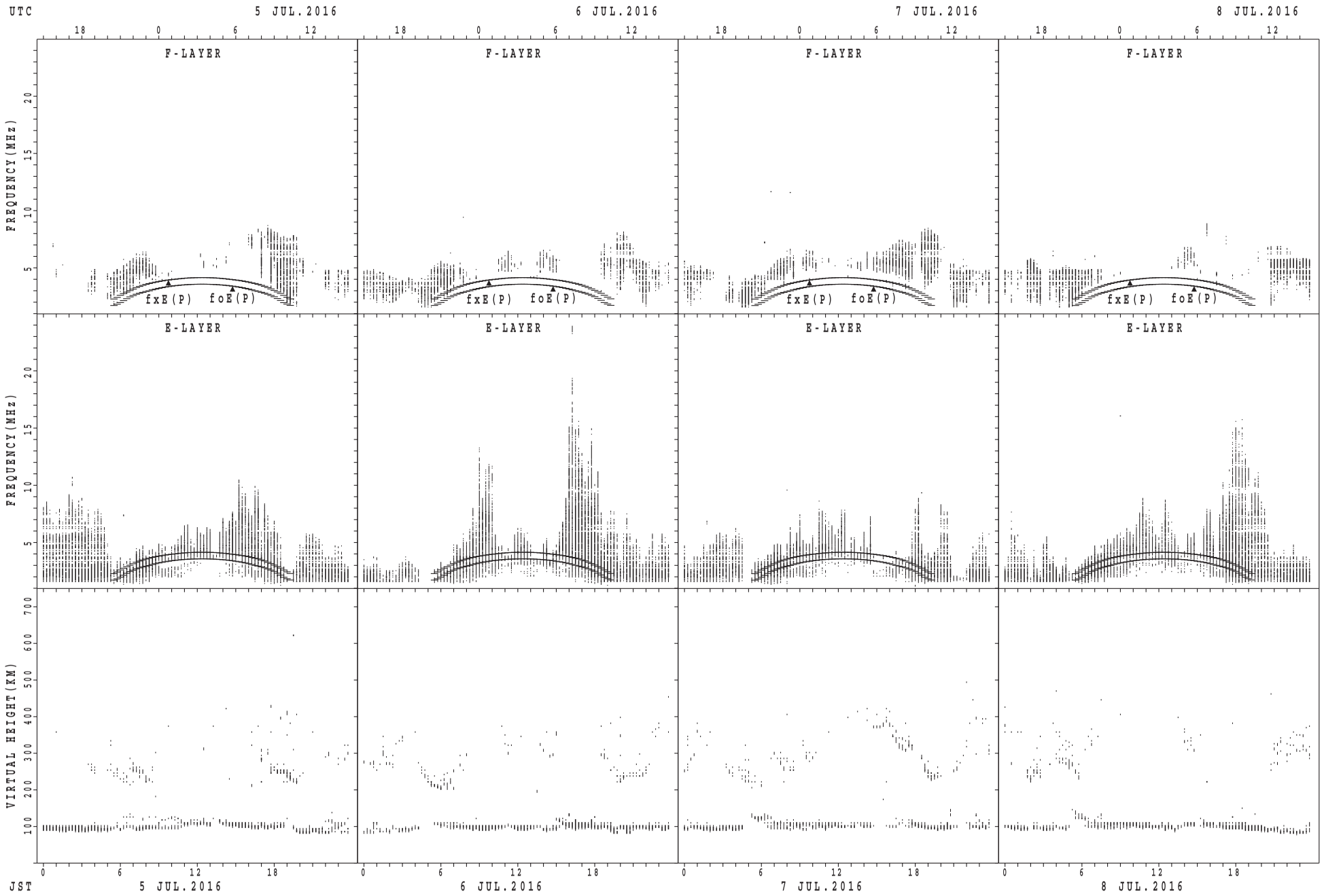
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



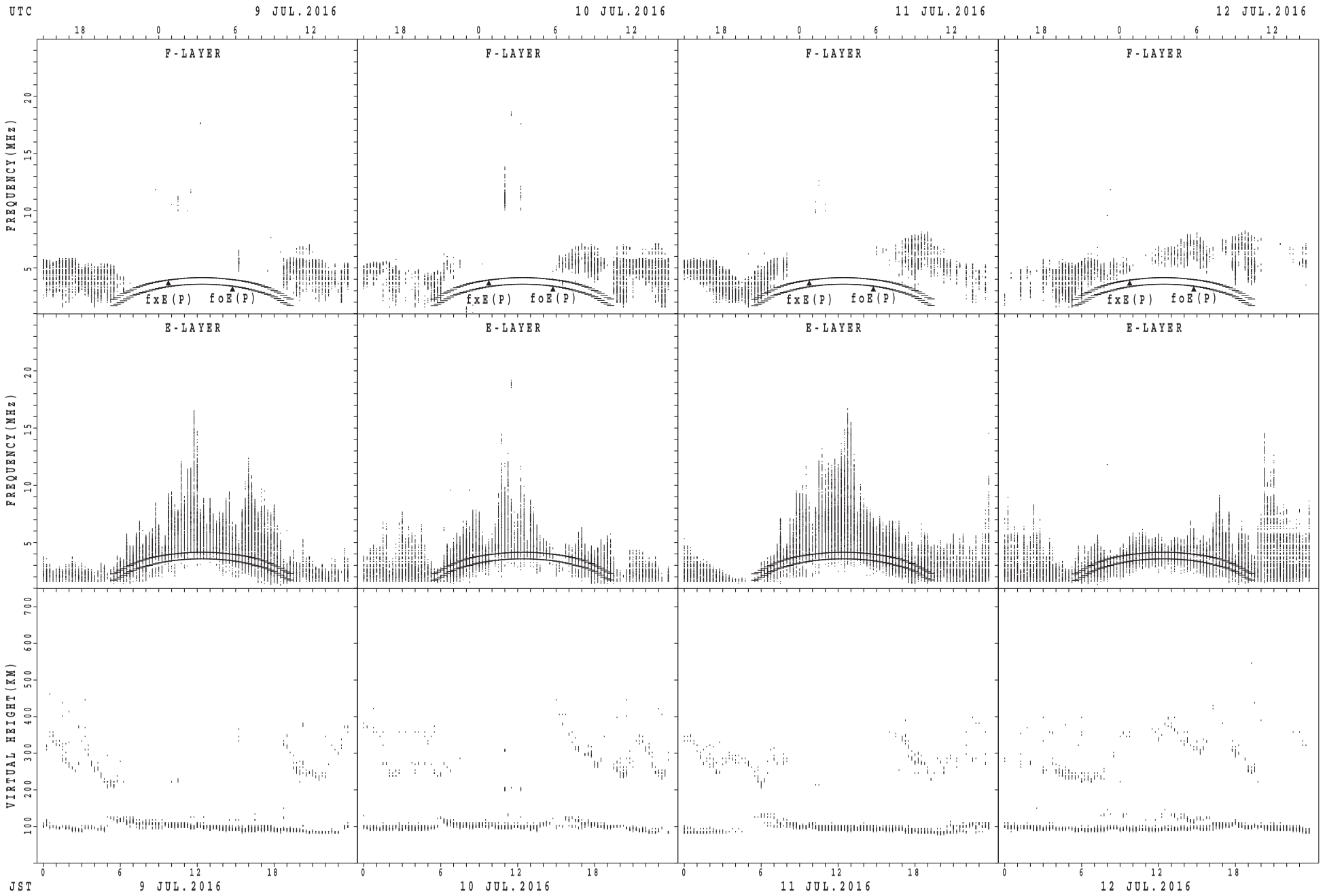
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



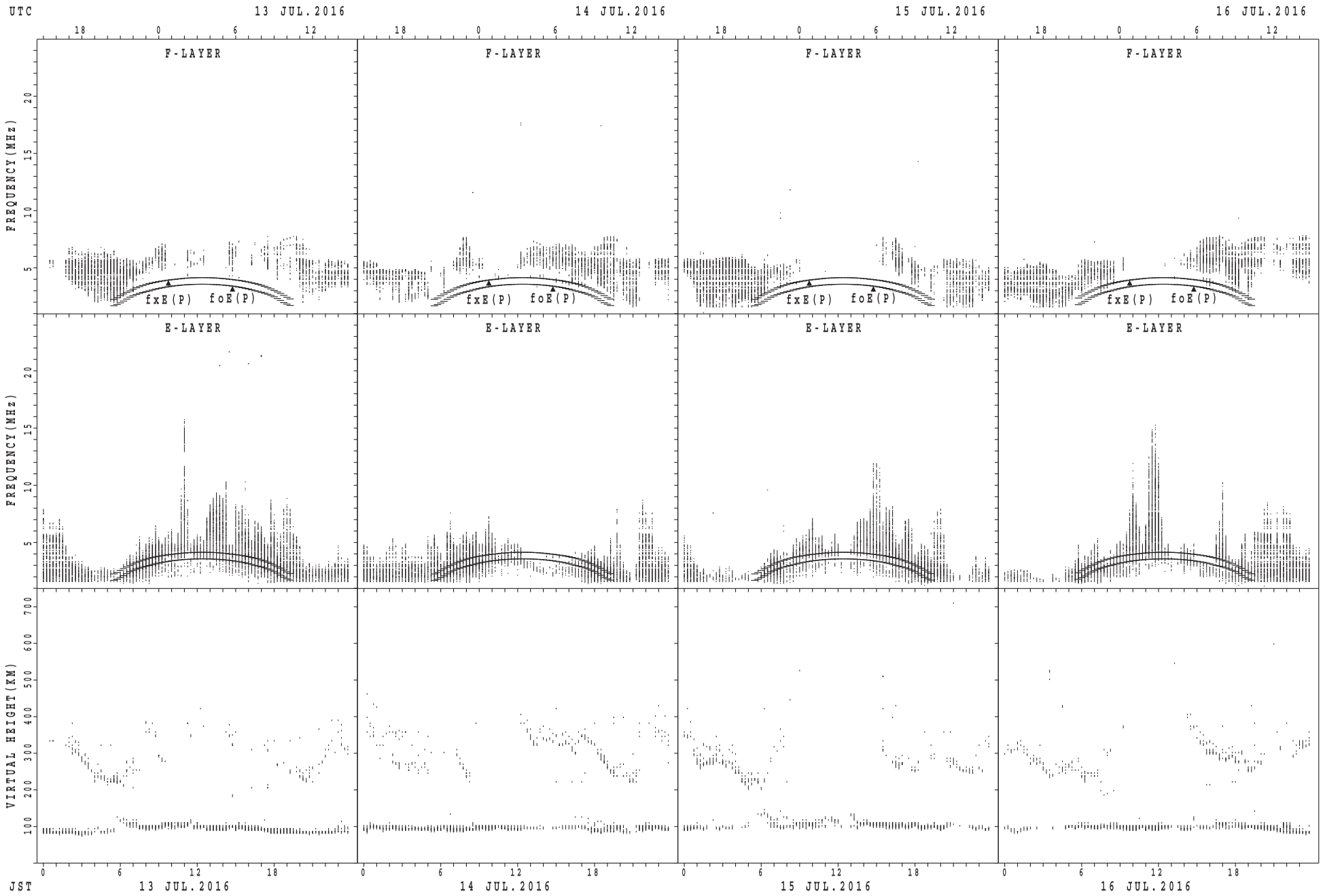
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



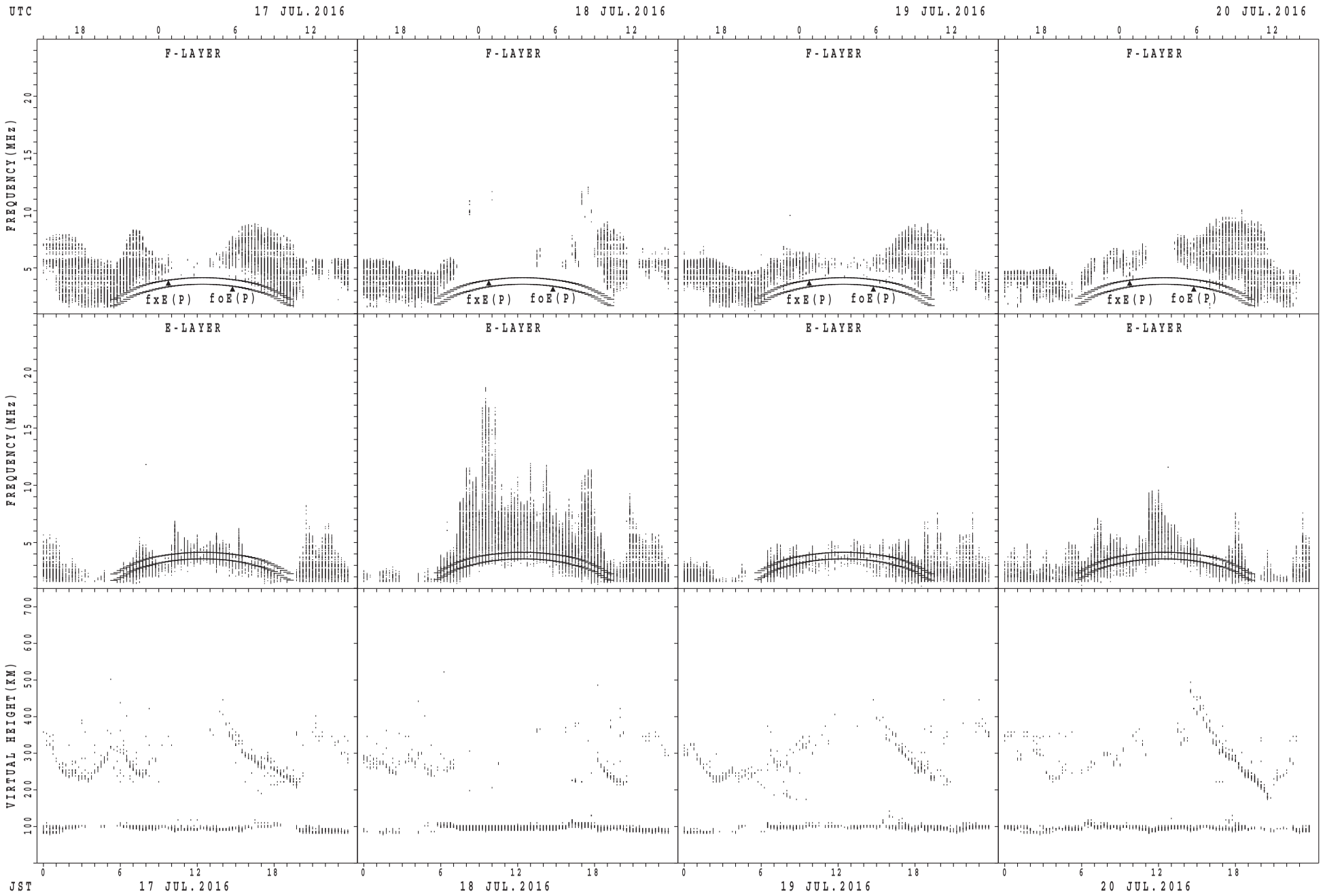
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



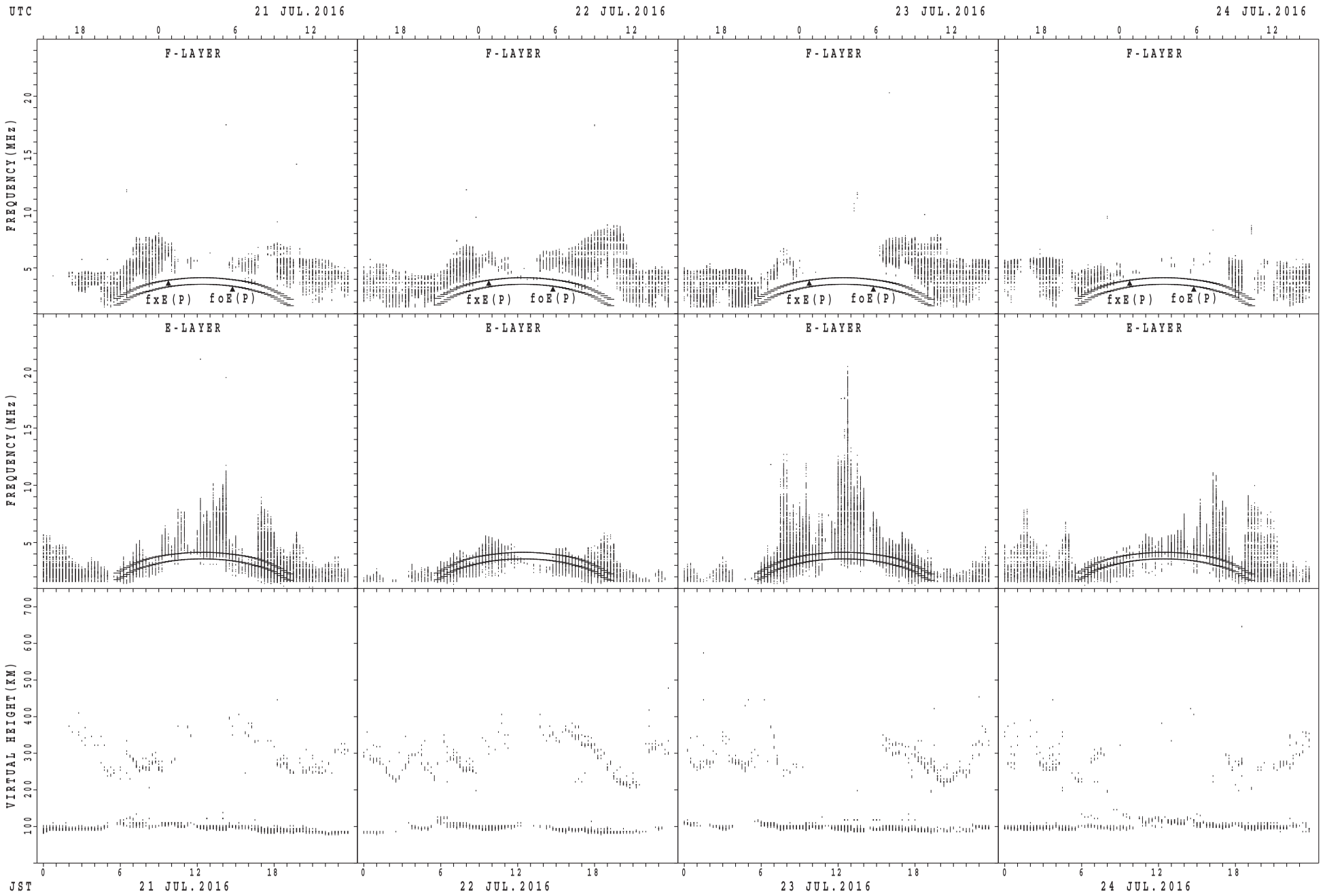
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



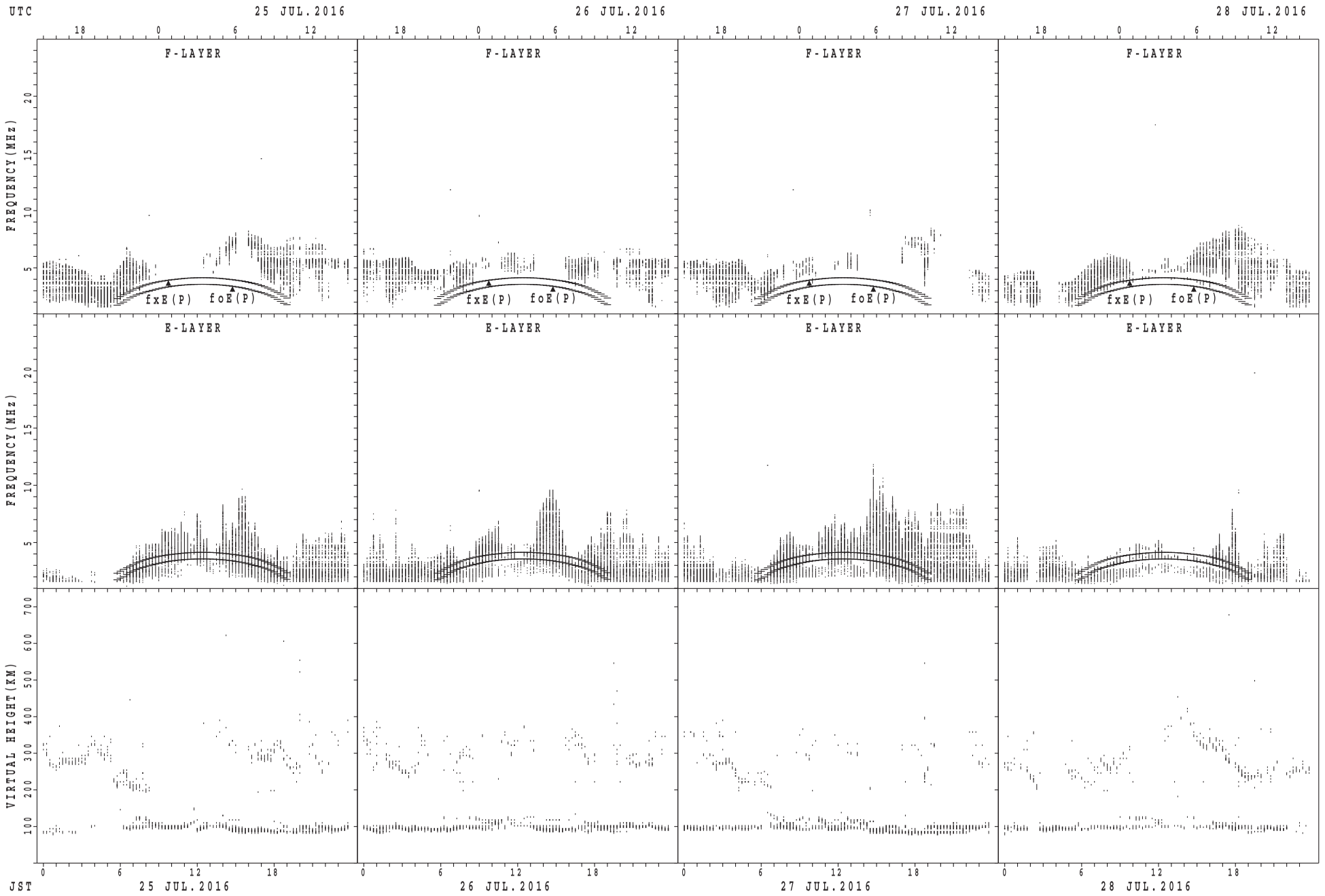
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



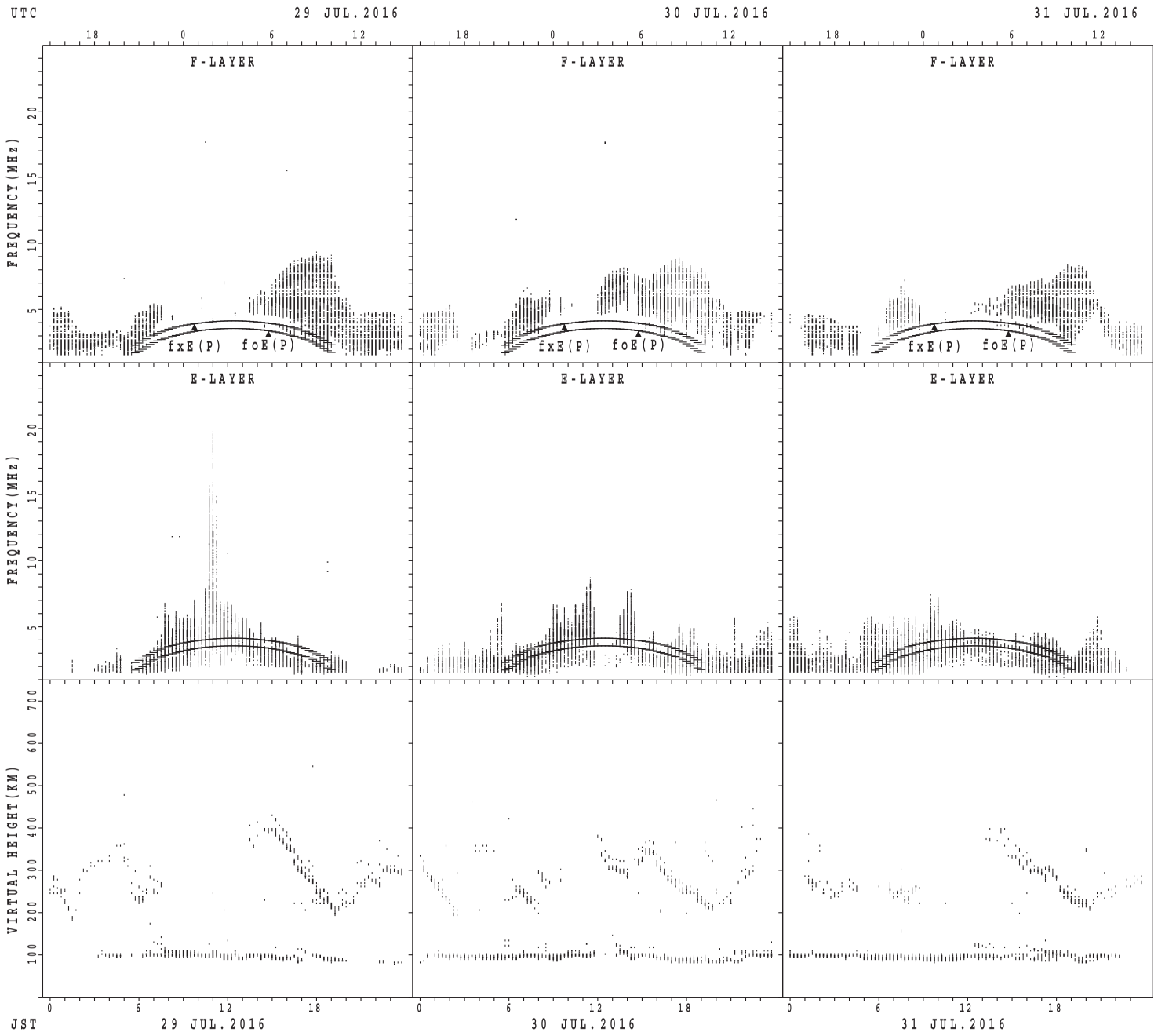
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



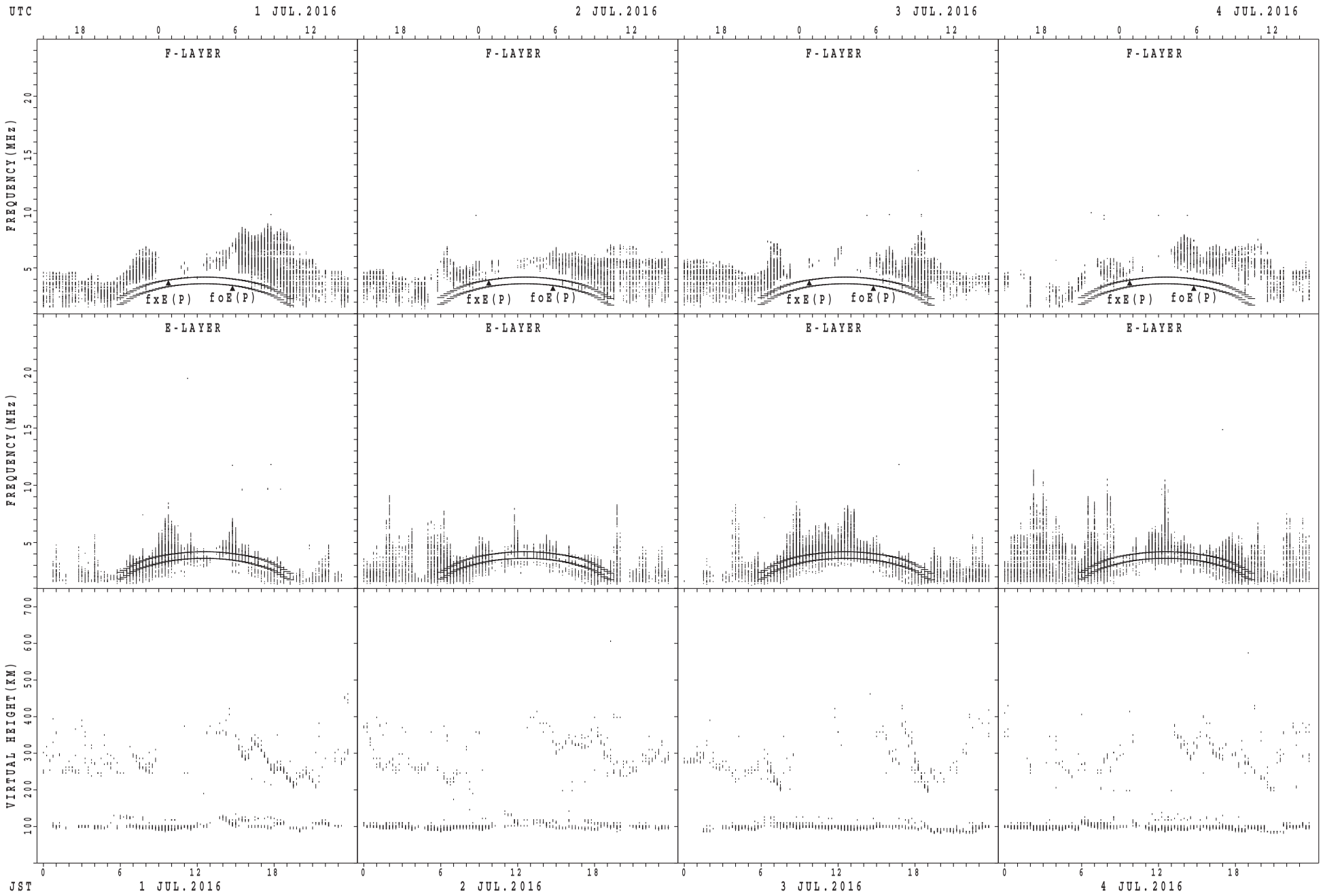
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



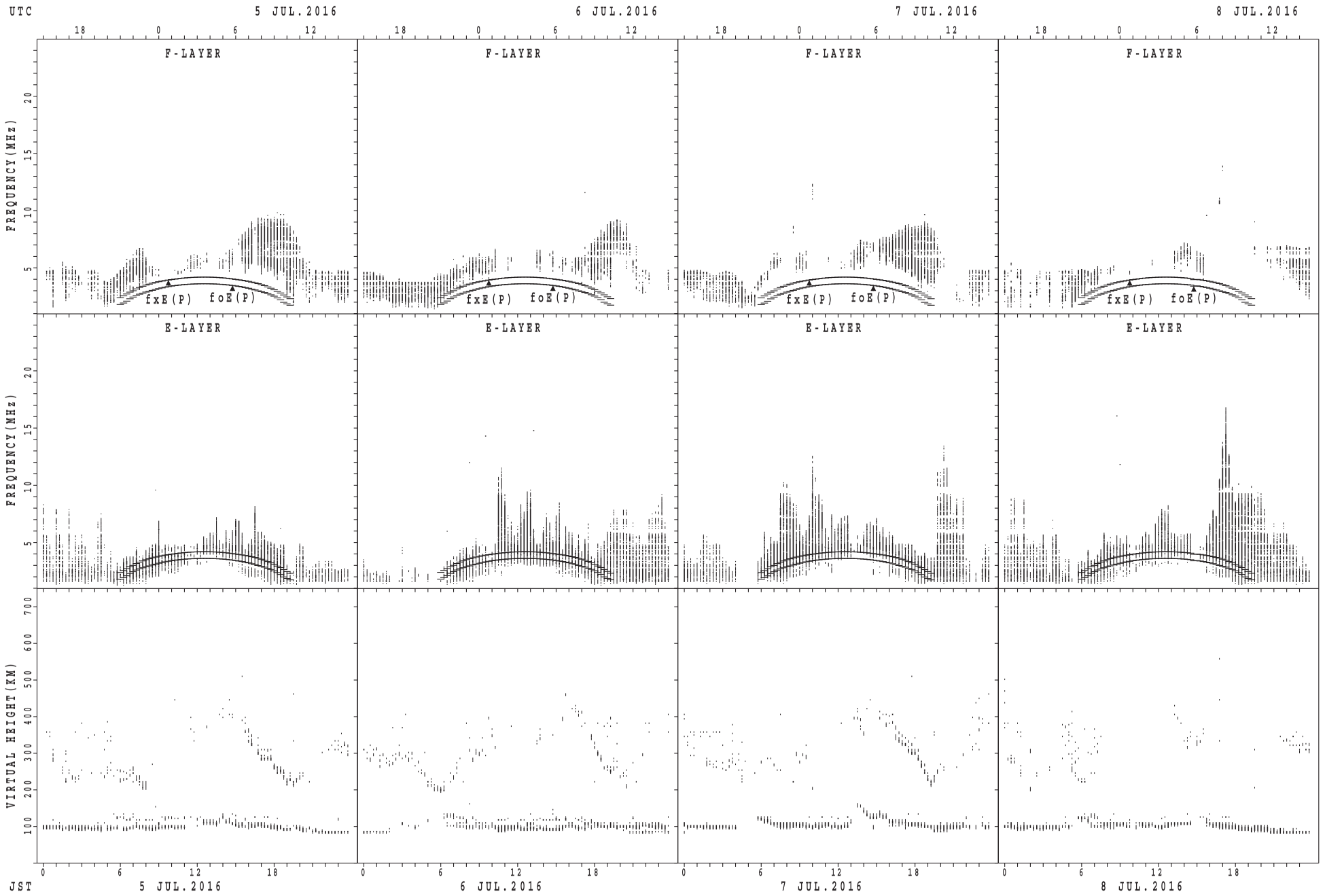
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

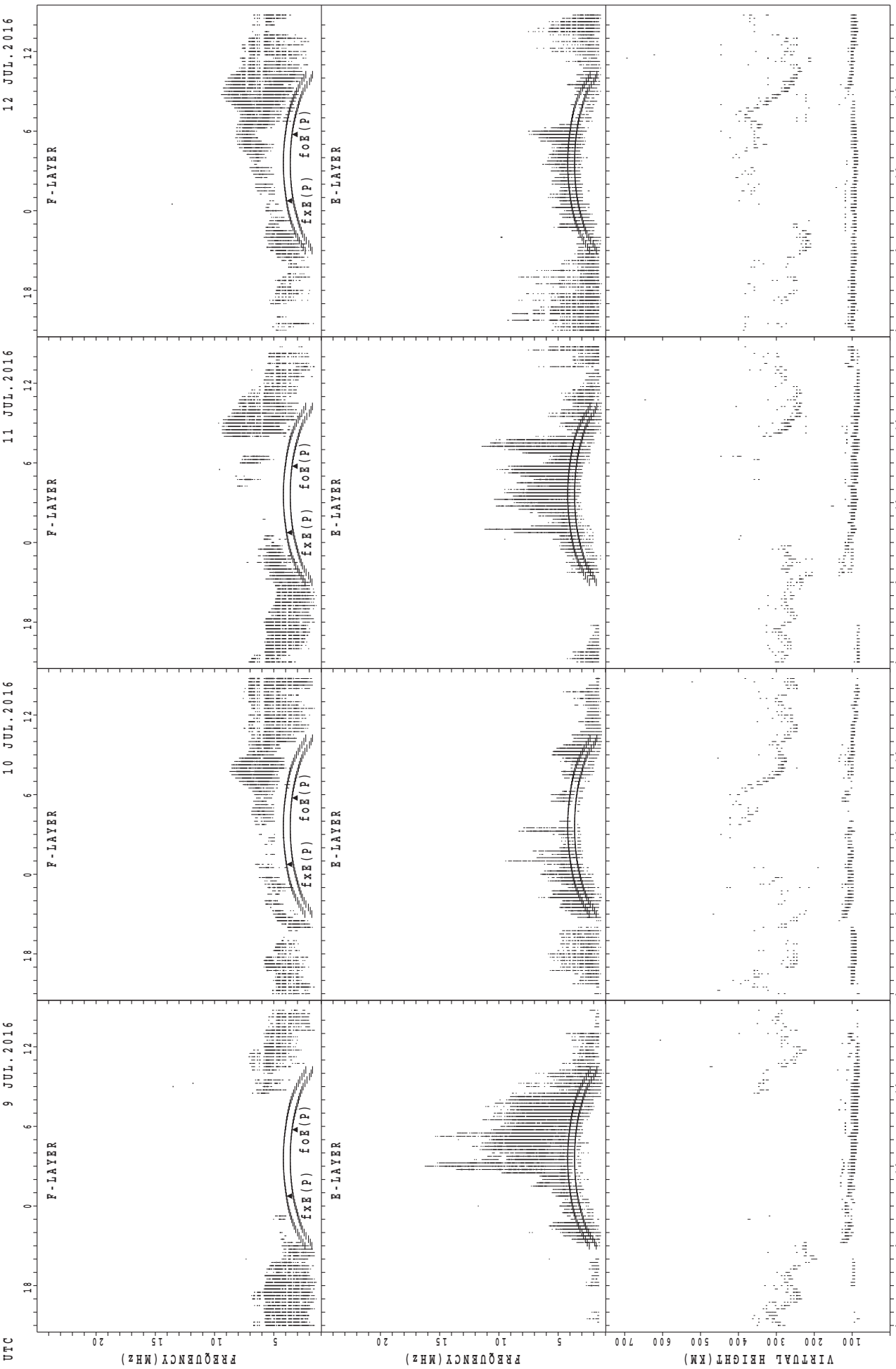


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

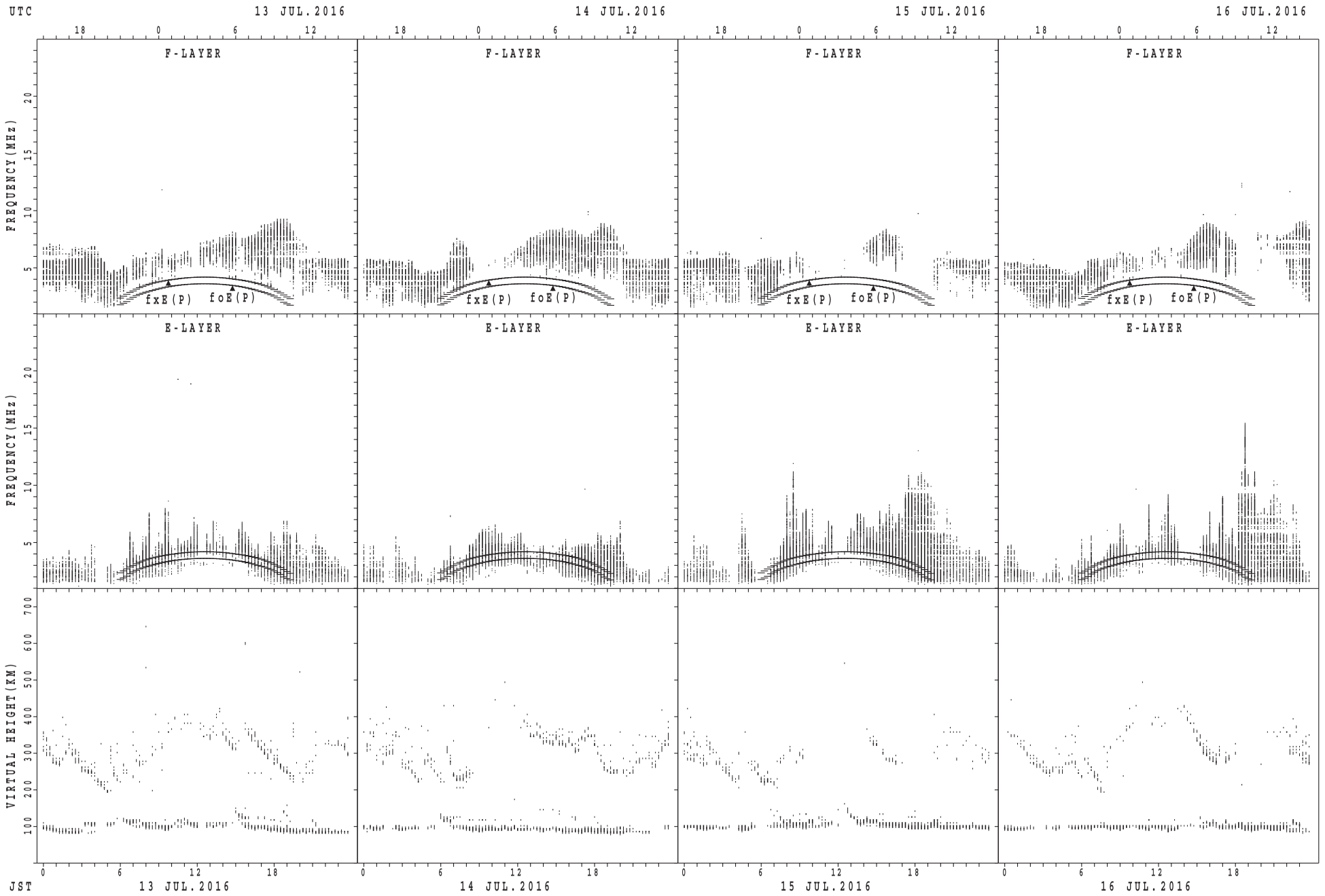
SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

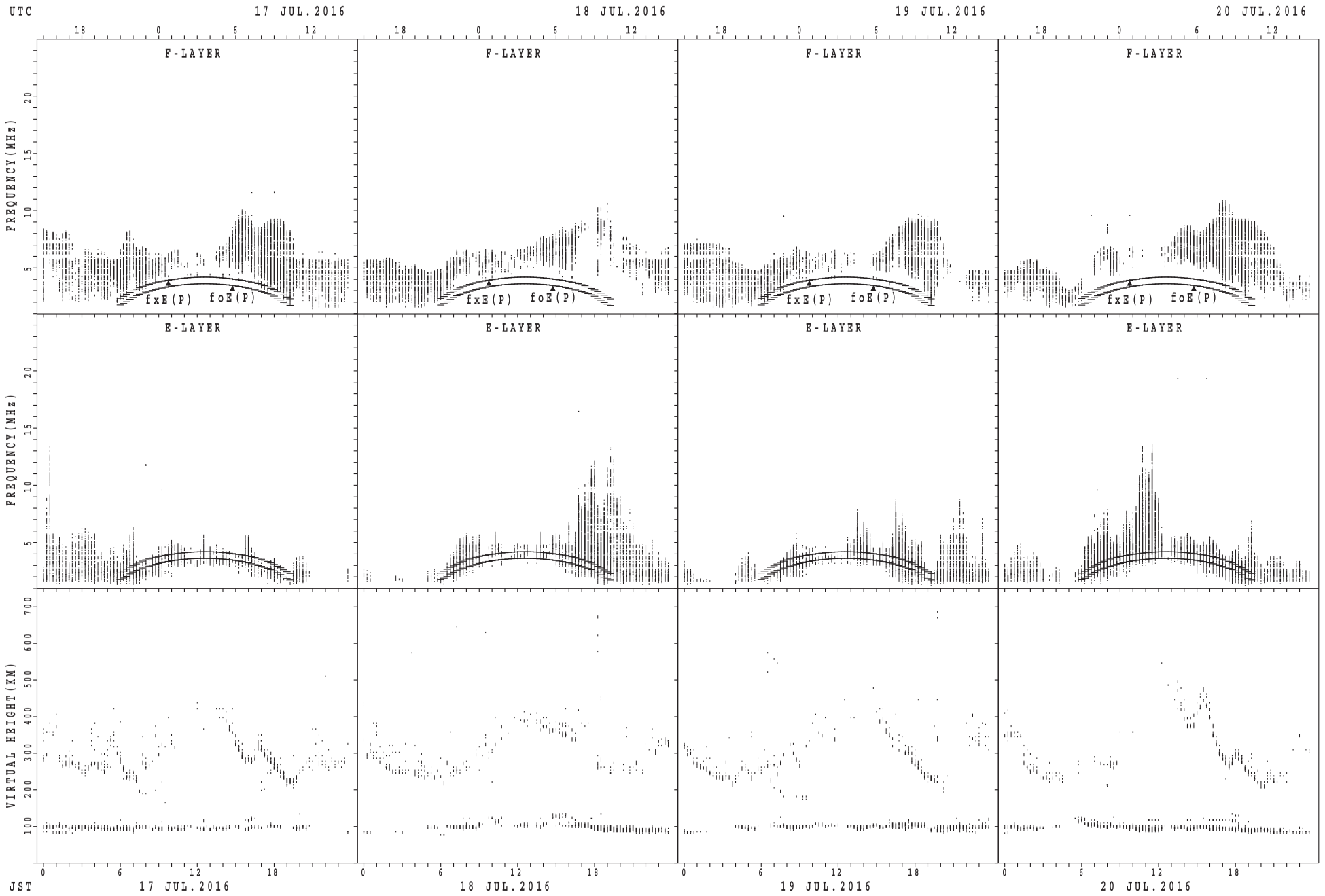

SUMMARY PLOTS AT Okinawa
UTC
JST
9 JUL.2016
10 JUL.2016
11 JUL.2016
12 JUL.2016
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



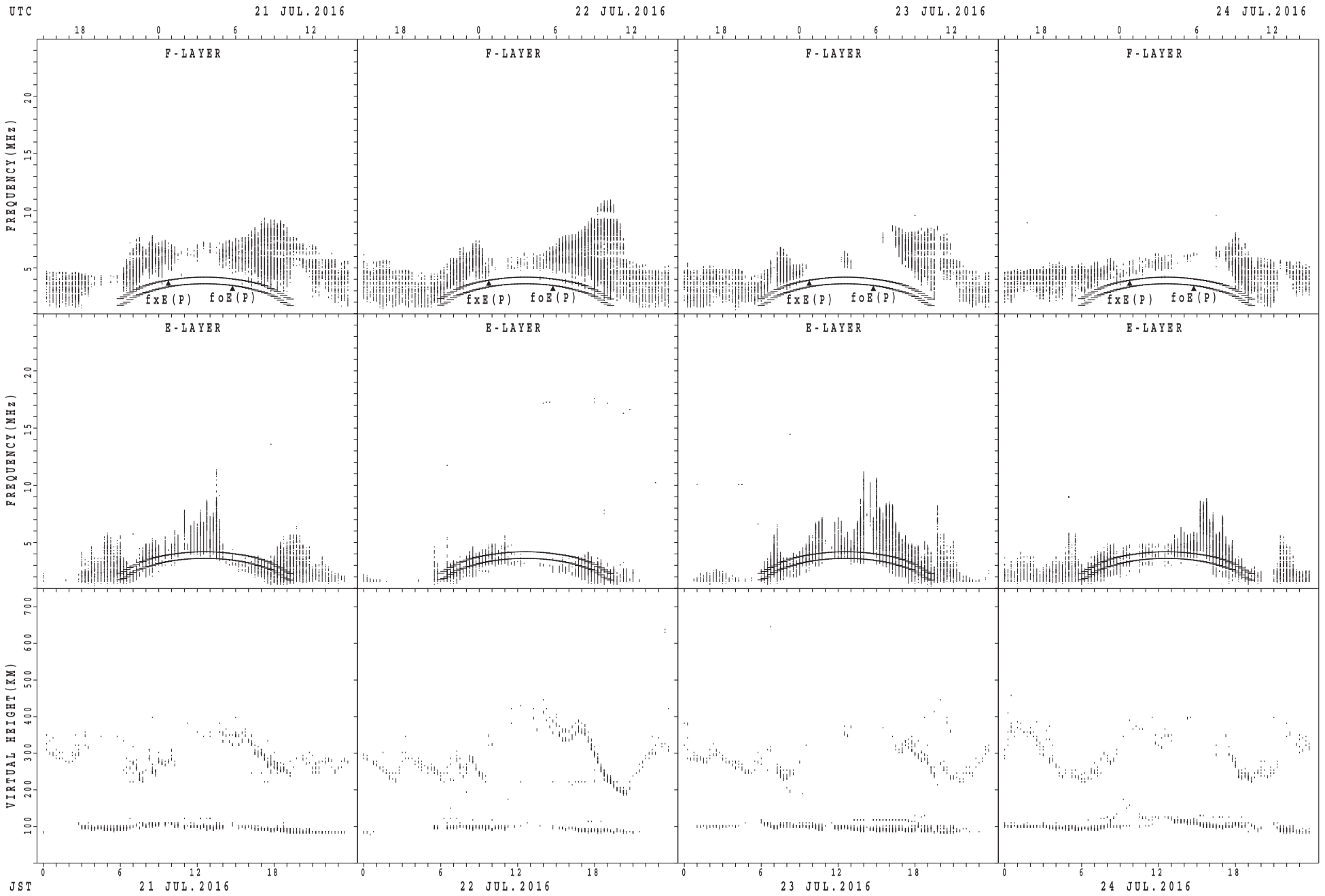
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



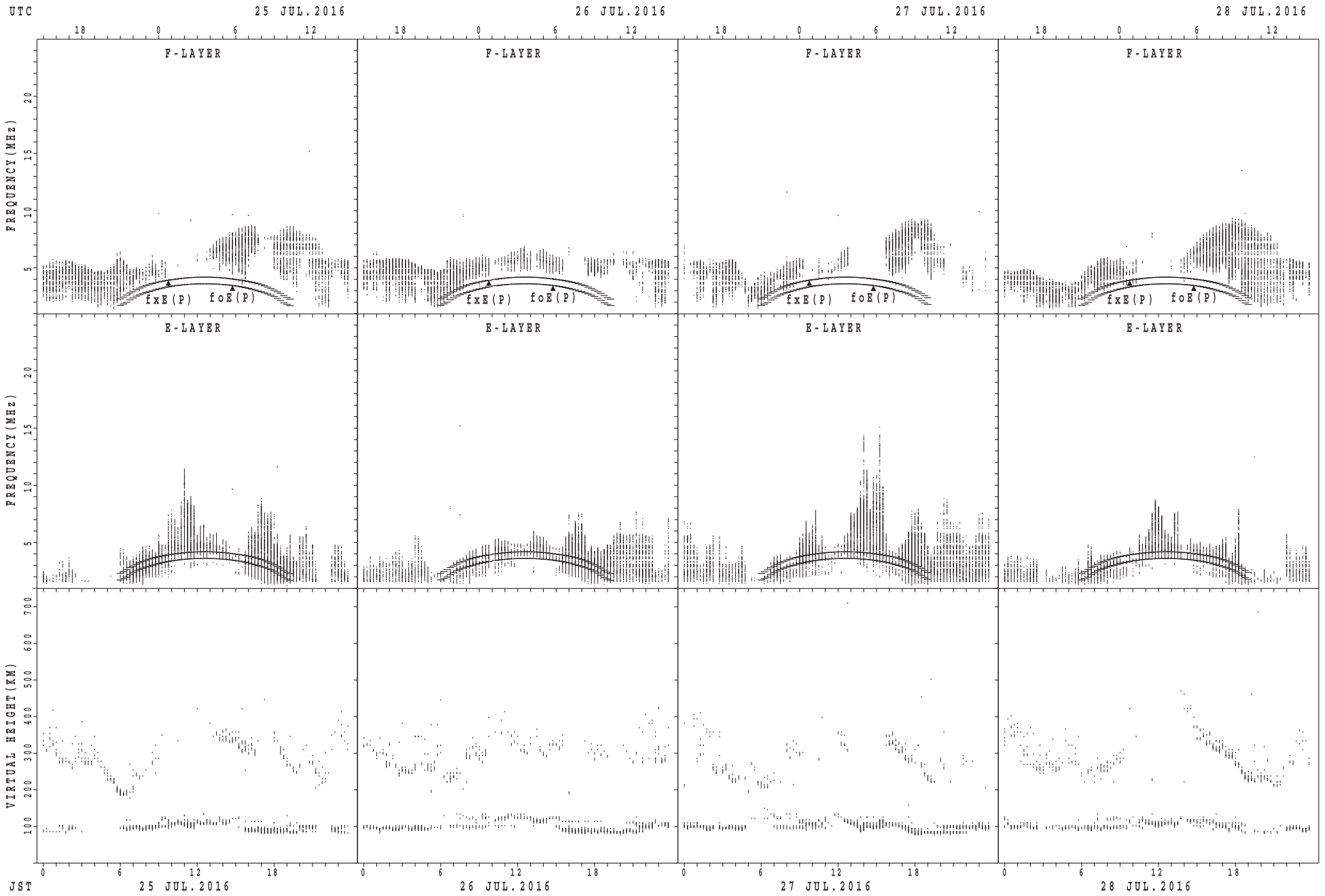
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



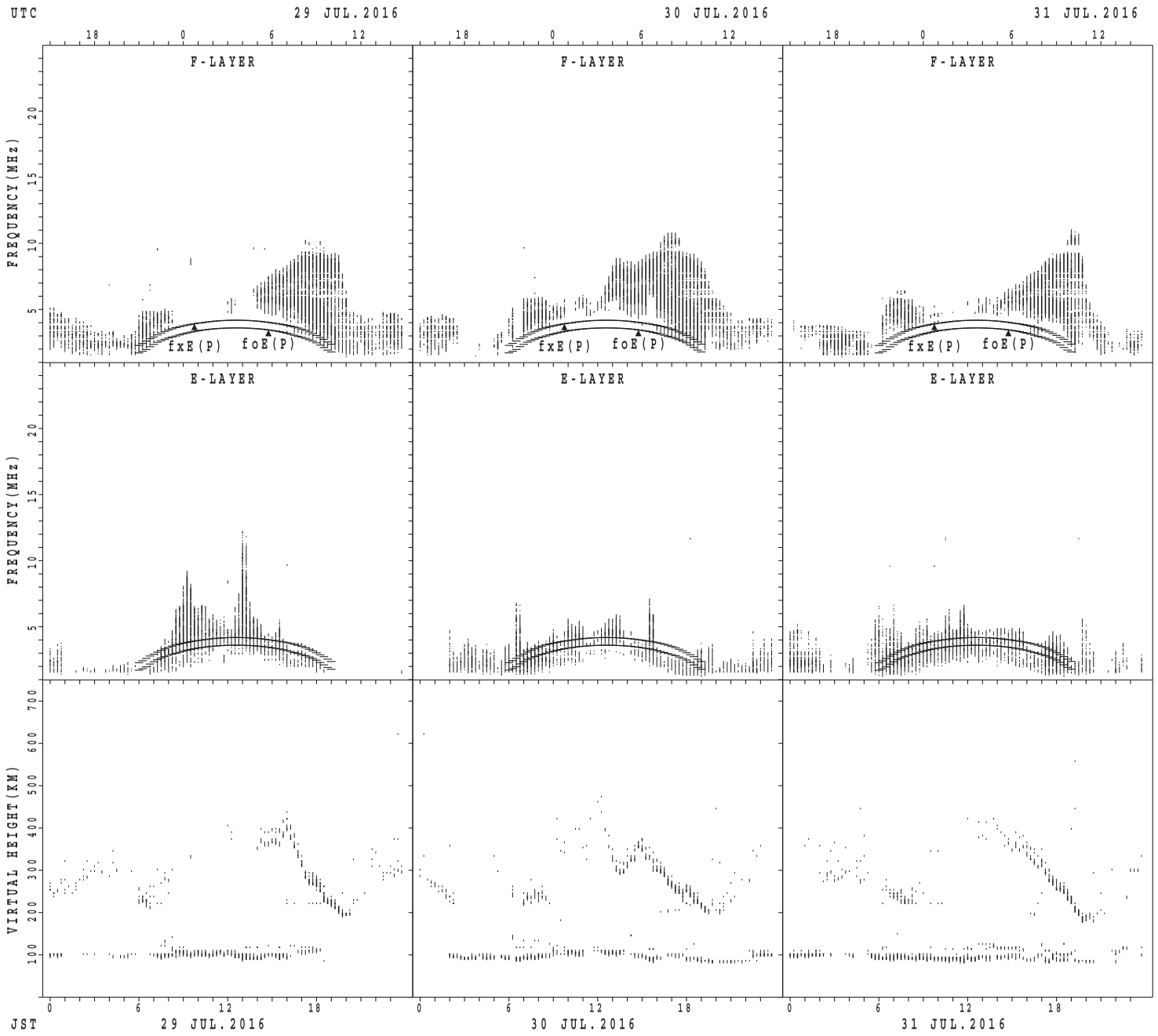
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es

JUL.2016 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°10.0'N LON. 141°45.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2		5	5										13	11	8	4	5	1	
MED					204		208	214										216	208	231	288	264	318	
U Q					216		212	244										246	252	256	306	316	159	
L Q					192		201	196										204	196	200	253	232	159	

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	25	22	22	30	29	28	29	29	26	24	25	27	29	27	29	28	29	30	28	27	27
MED	89	85	82	85	87	105	95	91	89	89	89	95	94	89	89	93	95	99	96	95	95	91	89	85
U Q	91	89	89	94	95	111	101	96	94	104	107	113	114	96	101	102	103	106	108	102	105	99	95	91
L Q	81	81	79	80	81	95	93	88	88	86	83	85	82	85	81	83	89	89	89	89	89	88	87	81

h'F STATION Kokubunji LAT. 35°43.0'N LON. 139°29.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	5									5	11	13	4	4	2	1	1
MED							222	248									326	282	248	280	251	302	320	402
U Q							111	284									328	316	271	307	272	346	160	201
L Q							111	228									317	224	220	261	236	258	160	201

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	25	25	26	28	28	27	29	25	25	24	24	23	20	26	28	31	29	28	30	28	29
MED	99	97	95	95	97	106	103	102	101	101	103	101	103	99	103	107	105	105	103	99	99	97	99	97
U Q	103	99	99	99	105	113	112	106	105	105	106	110	112	110	113	114	111	107	105	103	103	103	103	103
L Q	97	89	89	93	95	97	98	97	95	96	95	96	95	97	101	101	95	101	99	93	93	89	95	96

h'F STATION Yamagawa LAT. 31°12.0'N LON. 130°37.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1	2					4	10									13	13	15	9			1
MED		346	312					258	269									308	282	260	250			336
U Q		173	346					274	278									319	315	268	266			168
L Q		173	278					245	242									268	265	246	235			168

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	26	24	23	22	27	29	27	28	29	26	25	23	25	20	22	28	28	30	31	28	27	28
MED	99	98	97	97	97	97	105	109	105	107	105	103	103	99	103	99	104	103	97	97	97	98	97	99
U Q	103	101	99	97	101	99	121	113	111	111	107	107	106	107	109	113	109	108	104	103	101	103	103	103
L Q	95	96	95	95	95	95	95	100	97	98	99	97	95	95	95	95	95	95	92	93	89	89	91	92

MONTHLY MEDIANS OF h'F AND h'Es

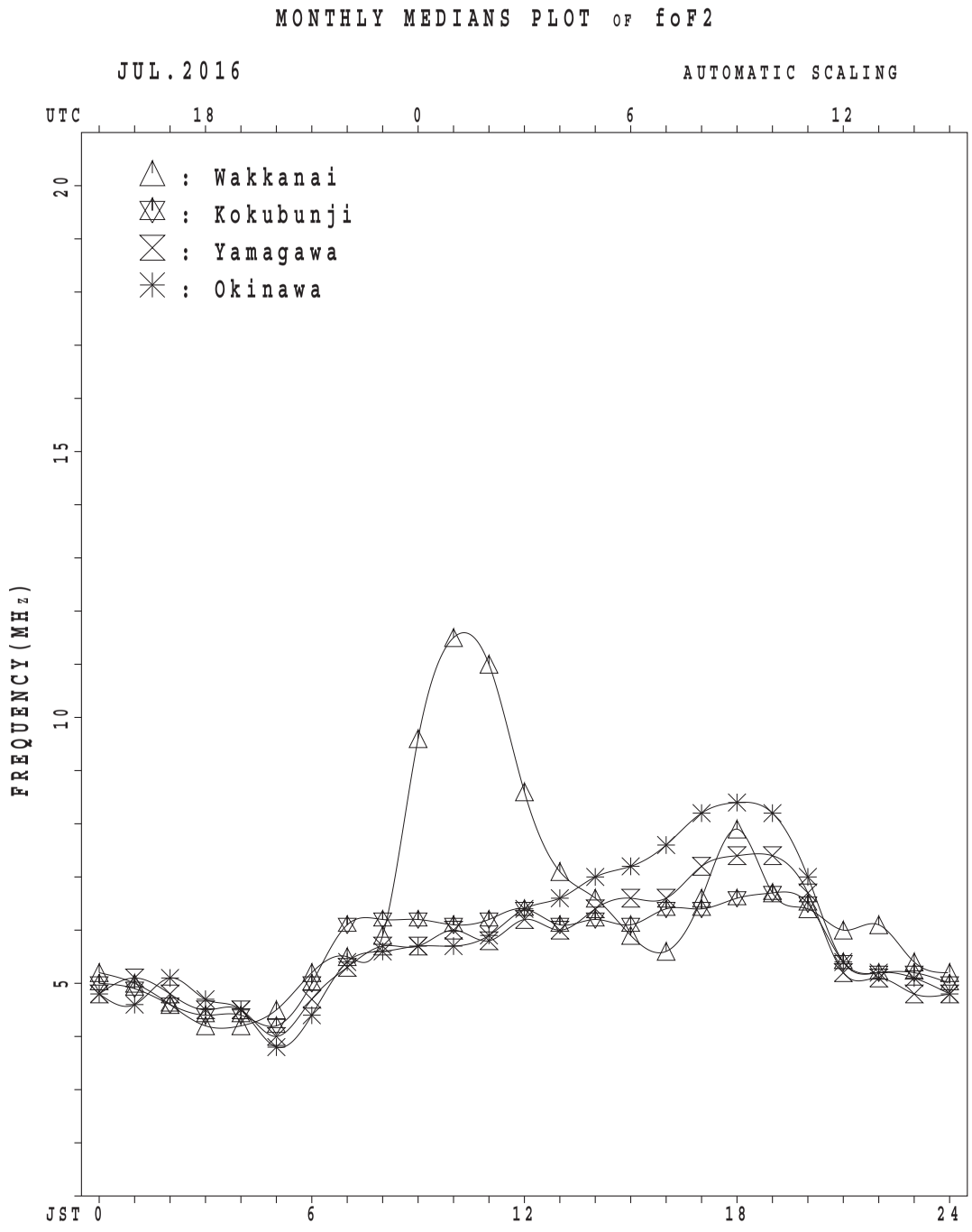
JUL.2016 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26°41.0'N LON. 128°09.0'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1		1				1	4	6									19	20	21	5	1	1	1
MED	320		318				206	257	254									310	270	252	224	300	372	302
U Q	160		159				103	281	280									318	296	265	270	150	186	151
L Q	160		159				103	238	238									284	263	230	203	150	186	151

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	22	21	22	21	20	21	28	30	29	28	30	28	26	26	25	24	27	29	27	28	27	24	23
MED	99	101	99	99	99	98	103	113	105	105	105	105	103	105	101	107	110	103	99	95	96	99	96	97
U Q	104	101	103	101	103	102	120	119	113	111	112	111	113	111	113	124	113	107	105	103	102	103	103	105
L Q	89	97	97	97	96	97	95	102	101	97	99	97	98	97	95	99	95	95	95	91	89	89	89	89


MONTHLY MEDIANS PLOT OF foF2
JUL.2016
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⛛ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 56	X 52	53	51																X 72		X 59	A	A
2	A	51	56	56																		A	A	X 58
3	58	58	56																			X 68	X 59	X 59
4	X 59	X 51	X 48												A							X 70	X 69	X 62
5	X 59	X 55	X 47		X 46																	X 64	X 64	X 59
6	X 61	57	58	58																		X 67	X 72	X 61
7	X 57	X 54	X 50																			X 67	X 69	X 64
8	X 62	X 53	X 50																			X 71	X 71	X 59
9	X 49	X 49																				X 65	X 61	X 60
10	X 54	X 55	X 53																			X 63	X 61	X 62
11	58	X 59	X 53																			X 63	X 62	X 60
12	X 62	X 55	X 46																			X 65	X 67	X 60
13	X 55	X 55	X 58		49																	X 65	X 64	X 60
14	X 55	58	56																			A	X 67	X 50
15	X 51	X 51	X 52											A								X 63	X 61	X 61
16	X 58	X 59	X 52																			X 67	X 56	X 62
17	58	58	58	57	53															X 67		X 69	X 67	X 63
18	X 53	X 53	X 49																			X 75	A	A
19	A	58	58		58																	X 65	X 66	X 59
20	X 54	56	56	53	50																	X 72	X 63	X 61
21	X 53	X 51	X 47																			A	A	A
22	X 60	X 59	60																			X 74	X 72	X 65
23	X 60	X 51	X 46																			X 75	X 75	X 71
24	X 59	X 55	X 51	48																	X 58	X 59	X 65	X 63
25	A	57	57	55	55											X 64						X 75	X 71	X 69
26	O X 46	X 55	X 49																			A	A	62
27	56	X 47	48																	X 57		X 56	X 53	X 49
28	X 47	X 45	X 48																			X 55	58	60
29	60	X 60	X 52																			X 59	X 56	X 59
30	60	X 57	A																			X 60	A	X 53
31	X 51	54	42		48				60													X 61	X 58	X 55
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	31	29	7	7				1							1				3	1	27	25	28
MED	X 58	X 55	X 52	55	50				60							X 64				X 67	X 58	X 65	X 64	X 60
U Q	X 60	58	56	57	55															X 72		X 70	X 69	X 62
L Q	X 54	X 51	X 48	51	48															X 57		X 61	X 60	X 59

JUL. 2016 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	45	F 42	F 40	40	44	48	51	58	58	58	R 48	53	52	51	50	A	A	52	65	65	52	A	A
2	A	F 38	F 40	F 42	38	A	A	49	50	R 56	A	A	A	R	A	A	A	A	47	49	58	A	A	51
3	F 46	F 44	F 38	36	36	F 42	53	46	48	56	A	A	A	A	A	46	A	46	A	52	60	61	52	52
4	52	44	41	42	39	42	52	50	52	A	61	A	58	54	A	R 48	48	A	60	61	71	64	62	55
5	52	48	40	44	39	50	50	54	54	53	E G 44	49	R 56	J R 47	R 57	54	54	51	R 56	63	56	57	57	52
6	54	F 46	F 46	F 42	44	48	54	52	52	A	A	52	A	56	52	50	50	50	A	A	60	60	65	54
7	50	47	43	44	39	47	48	A	52	49	64	E G 55	A	A	54	A	A	52	56	57	60	60	62	58
8	55	46	43	44	41	38	42	A	A	E G 42	A	R 49	E G 44	A	A	49	46	47	46	52	66	64	64	52
9	42	42	38	39	35	38	44	A	A	A	E G 43	A	A	A	A	A	48	45	49	A	57	58	54	53
10	47	48	46	35	35	42	44	R 52	A	A	A	E G 44	A	A	E G 44	R 50	49	A	45	49	54	56	54	55
11	F 47	52	46	41	41	50	46	52	59	A	A	A	53	54	52	A	54	54	60	R 49	A	56	56	53
12	R 55	48	39	38	38	43	47	A	A	A	A	A	A	A	A	A	A	50	A	51	A	58	60	54
13	48	48	Z 51	44	F 35	40	44	46	A	A	A	A	A	A	E G 43	50	50	47	48	52	55	58	57	53
14	48	F 42	F 41	41	A	43	48	E G 47	A	61	A	A	A	A	A	60	53	54	60	55	A	A	60	43
15	44	44	45	42	40	42	42	A	A	A	A	A	A	A	A	52	52	A	A	54	54	56	54	54
16	51	52	45	35	37	44	47	50	A	A	51	53	51	E G 45	51	A	51	A	J R 52	63	67	60	48	54
17	F 45	F 46	F 46	F 44	F 41	44	A	A	57	A	A	A	56	52	56	56	54	56	56	60	65	62	60	56
18	46	46	42	39	37	43	47	54	59	53	A	E G 46	E G 46	46	50	A	A	50	50	A	68	68	A	A
19	A	F 43	F 43	42	F 42	52	A	67	68	61	61	58	54	54	56	56	51	53	56	68	69	58	59	52
20	47	F 38	F 41	F 38	F 38	47	56	72	A	A	58	55	55	78	68	77	79	79	80	75	68	65	56	54
21	46	44	40	44	44	57	53	A	60	61	A	54	56	A	A	51	50	49	51	55	A	A	A	A
22	53	52	F 46	46	43	A	51	A	A	57	56	51	A	54	54	51	51	53	56	65	70	67	65	58
23	53	44	39	39	38	38	44	47	54	49	53	53	52	54	A	62	52	53	57	64	73	68	68	64
24	52	48	44	F 36	30	36	E G 36	46	56	A	A	50	E G 43	A	A	52	50	47	47	51	51	52	58	56
25	A	F 43	F 42	F 38	F 38	39	A	56	A	58	E G 45	54	64	A	59	57	60	58	56	63	68	68	64	62
26	D C 39	48	42	41	43	39	42	J R 42	48	48	A	A	54	51	U R 50	48	54	52	A	A	57	A	A	F 47
27	F 44	40	F 35	35	37	40	52	52	A	A	A	A	A	A	48	A	51	51	52	50	52	49	46	42
28	40	38	41	37	A	44	44	46	50	51	A	A	A	A	A	A	A	A	A	56	61	48	F 44	F 46
29	F 48	53	45	40	32	31	38	A	A	A	A	48	A	54	E G 38	52	59	64	75	56	52	52	49	52
30	F 46	50	A	42	A	42	45	50	60	56	55	50	52	A	54	57	55	A	A	62	62	54	A	46
31	44	F 39	F 37	38	F 32	43	52	50	F 47	48	R 51	R 51	R 50	51	A	51	53	50	52	48	54	54	51	48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	31	30	31	28	29	27	22	18	17	13	18	17	15	18	22	24	23	24	27	27	27	25	28
MED	48	46	42	41	38	43	47	50	54	56	55	50	53	54	52	52	52	51	54	56	60	58	57	53
U Q	52	48	45	42	41	46	52	52	59	58	60	54	56	54	56	56	54	54	56	63	68	64	62	55
L Q	46	F 43	40	38	36	40	44	47	50	49	E G 48	49	E G 50	51	E G 50	50	50	49	50	51	55	54	53	52

JUL. 2016 foF2 (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						336	A	396	420	436	L 448	L	444	L	L	L	A	A	A					
2					A	A	A	L	L	L	A	A	L	L	A	A	A	A	A					
3				A	A	L	372	L	L	A	A	A	A	A	A	A	A	A	A	A	A			
4					A	U L 324	364	L	432	A	A	A	A	448		L	A	A	A	A	A			
5						L	A	404	U L 420	420	444	440	L	A	A	L	A	L	352	A				
6					L	L				A	A	A	A	440	444	412	412	L	A	A	A			
7					L	L	A	A	A	448	L	552	A	A	A	A	A	400	L					
8					L	300	A	A	A	424	A	L	R 444	A	A	A	A	392	A	A	A			
9					A	A	A	A	A	A	428	A	A	A	A	A	L	L	A	A				
10						L	L		A	A	A	436	A	A	L	L	420	A						
11						L	A	A	A	A	A	A	L	444	444	A	A	L	L	A	A			
12						L	L	L	A	A	A	A	A	A	A	A	A		A	A	A			
13					A	336	368	A	A	A	A	A	A	A	432	L	420	388	L	L				
14					A		388	472	A	452	A	A	A	A	A	L	L	408	L		A			
15						L	L	A	A	A	A	A	A		A	L	L	A	A					
16						364	A	A	A	A	L	464	452	452	444	A	A	A	A					
17						392	A	A	A	A	A	A	L	472	448	L	A	400						
18						332	L	A	A	A	A	R 456	456	L	A	A	A	A	A	A				
19				356		A	A	L	A	L	L	L	L	468	L	L	A 420	392	L					
20						348	A	A	A	A	468	L	A	L	L	A	L	A						
21							A	A	A	A	A	A	A	A	A	A	L	L	L		A			
22						A	L	A	A	A	A	A	A	A	A	L	L	L	A					
23						L 324	364	A	L	452	L	A	464	L	A	L	420	L	348	A				
24						308	356	392	484	A	A	432	432	A	A	L	408	384	404	436				
25				A	A	A	A	A	A	L	L	436	A	A	L		A	372	L					
26						L	348	376	L	L	A	A	428	L	L	L	L	L	A	A				
27						312	L	404	A	A	A	A	A	A	A	A	404	368	L					
28					A	L	356	A	A	A	A	A	A	A	A	A	A	A	A					
29						A	L	A	A	A	A	L	A	A	L	L	L	L	196					
30					A	A	L	A	L	L	L	L	L	A	416	U A 428	A	A	A					
31				A		L	A	L	L	A	L	L	L	440	A	A	L	L	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1		11	8	6	4	6	4	7	7	7	6	2	7	9	4	1				
MED				356		332	364	400	426	442	446	440	444	448	444	420	420	392	350	436				
U Q						348	370	404	458	452	458	464	456	468	444		420	400	378					
L Q						312	356	392	420	424	436	436	432	440	432		408	378	272					

JUL. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					U A 208	208	252	R 300	U R 300	308	U A 328	352	U A 308	344	344	316	304	264	220		A			
2				A	U A 292	A	260	280	308	320	B	A 332	312	A	340	352	U A 304	U R 272	A	A	A			
3			K 220	220	228	200	A	U R 304	304	324	324	312	A	332	A	272	260	284	204	A	A			
4				A 172	224	248	280	296	320		A	A	388	A		A	308	268	212	A	A			
5				B	212	248	292	308	328	324	324		B	B	348	320	296	272	208	A	A			
6			A	A 180	196	272	300	320	328	336	320	296	U R 344	300	324	288	272	200	A	A			
7				B	B 220	268	A 296	U A 328	324	324	A	324	A	A	A	324	U R 296	228	U R 180	204			
8				B	B 204	U A 256	296	300	328	A	A	A	A	348	316	360	288	A 180		A			
9			184	B 204	192	236	304	A	A	U A 332	332	340	324	A	A	328	284	236	192	A			
10				B 920	B 196	260	316	316	316	352	336	352	A	296	320	312	284	224	176	A			
11				180	200	216	268	304	316	328	328	328	408	384	348	352	352	276	224	200	A			
12				240	320	232	248	300	324	324	344	344	332	A	332	308	308	308	220	192	A			
13				212	208	208	252	304	316	324	A	A	324	308	352	A	A	288	248	200	A			
14				220	A	A	240	304	324	336	336	340	340	344	344	344	312	348	228	A	A			
15				A	A	216	248	R 296	308	332	A	336	320		320	336	312	280	304	248	168			
16				A	4 110	224	240	296	296	316	A	8 126	A	A	A	344	308	292	244	A	A 896			
17				192	188	196	256	296	308	328	336	336	328	356	256	300	328	A	248		A			
18				228	A	200	252	304	328	B	B	308	B	356	348	332	300	284	A	A	A			
19				A	A	200	256	296	308	316	A	A	A	A	316	340	304	280	212	A	A			
20				A		208	260	280	312	300	288	A	A	368	A	A	A	A	A	A	A			
21				A	232	200	256	300	332	316	332	368	A	A	A	A	296	268	252	A	A			
22				232	228	A	240	284	308	308	A	A	308	292	A	292	A	292	228	A	A			
23				A	224	204	240	276	296	308	316	A	A	A	A	A 220	A	244	208	A	A			
24				A	A	228	232	284	304	304	296	296	356	276	316	316	288	268	200	A				
25				A	A	192	236	280	308	316	320	320	284	A	A		A	272	196	A	A			
26				B	B	180	228	256	288	304	304	320	348	288	288	288	288	248	196	A	A			
27				A	B	192	236	252	300	300	316	308	308	296	228	228	276	268	A		A			
28				A	A	A	A	280	304	304	316	316	316	316	280	280	264	A	A	A	A			
29				A	A	192	224	268	296	324	324	324	324	328	304	280	280	248	196	172	B			
30				A	A	A	220	280	292	292	304	312	A	A	324	308	276	244	196	A	A			
31				204	200	A	224	280	280	284	A	364	284	340	332	308	288	248	176	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			2	10	15	25	29	31	30	29	21	23	21	17	21	24	26	28	25	9	3			
MED			202	220	208	204	248	296	308	316	324	324	324	332	324	316	304	274	220	192	204			
U Q				232	228	216	256	300	316	326	334	336	344	350	346	334	312	286	232	200	A 896			
L Q				204	188	196	236	280	300	306	316	312	308	302	298	290	288	268	200	178	168			

JUL. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	28	JA 38	JA 33	JA 59	JA 29	JA 26	JA 47	42	40	JA 50	G 36	G	JA 50	38	39	130	JA 78	JA 88	96	JA 161	JA 47	38	78	JA 108
2	JA 87	JA 52	JA 51	JA 63	JA 55	JA 75	72	40	40	JA 65	JA 61	JA 118	JA 63	42	50	64	85	73	JA 63	JA 75	JA 163	JA 109	JA 100	JA 87
3	JA 31	JA 34	JA 34	JA 53	JA 46	JA 31	JA 36	40	JA 61	JA 88	JA 183	JA 97	JA 93	66	72	JA 83	JA 77	JA 64	JA 73	JA 48	JA 41	39	45	JA 43
4	JA 32	26	28	26	JA 29	G	33	JA 63	JA 84	JA 100	JA 97	66	70	JA 56	70	65	62	JA 100	JA 87	115	JA 109	41	JA 50	JA 61
5	JA 49	JA 27	37	JA 27	27	JA 41	JA 59	34	JA 41	JA 39	36	JA 39	38	41	JA 70	JA 55	JA 97	JA 77	JA 110	31	53	JA 51	44	48
6	JA 49	47	JA 29	25	25	27	JA 45	JA 49	60	JA 83	70	64	JA 88	G 44	42	36	JA 46	JA 75	67	JA 71	JA 81	JA 44	33	EB 16
7	EB 15	JA 27	26	25	25	JA 38	JA 51	JA 67	60	38	43	72	70	76	JA 60	74	57	38	JA 41	JA 31	JA 31	JA 43	JA 48	32
8	JA 19	EB 16	JA 21	EB 16	EB 16	G	JA 98	40	JA 49	JA 48	JA 61	JA 75	JA 41	JA 66	68	JA 45	JA 63	JA 47	JA 85	JA 41	JA 30	EB 16	EB 14	25
9	EB 15	JA 19	26	23	JA 43	JA 62	JA 53	84	JA 109	JA 116	JA 50	JA 53	JA 61	JA 83	64	73	JA 62	56	52	JA 76	45	JA 39	JA 35	JA 62
10	JA 40	42	JA 40	G 26	24	26	34	JA 49	JA 53	JA 65	JA 66	JA 40	JA 53	60	38	JA 37	40	66	67	68	JA 40	42	44	26
11	JA 41	30	28	25	JA 31	31	JA 52	52	JA 60	61	JA 74	JA 45	G 42	50	JA 61	65	58	JA 52	60	JA 69	75	47	50	JA 76
12	JA 64	EB 16	JA 63	JA 52	JA 52	37	JA 42	JA 52	JA 85	155	JA D 101	C 100	JA 167	JA 221	JA 223	JA 143	110	JA 88	JA 167	JA 178	JA 133	JA 105	EB 16	38
13	JA 76	JA 51	JA 51	57	G 26	27	37	52	JA 87	117	JA 199	JA 131	JA 119	JA 66	JA 75	JA 49	JA 37	39	43	39	JA 60	JA 85	44	58
14	JA 87	46	39	JA 50	JA 81	JA 85	JA 31	45	JA 62	63	117	JA 85	JA 76	114	JA 167	G 39	JA 44	39	JA 37	35	76	JA 55	JA 33	42
15	JA 27	27	31	39	39	JA 50	JA 32	JA 57	JA 63	JA 108	75	JA 89	JA 106	94	91	JA 58	JA 77	JA 108	JA 147	34	44	JA 88	JA 52	54
16	51	JA 47	JA 41	JA 61	JA 39	32	JA 62	JA 62	70	76	61	JA 63	JA 46	JA 60	46	64	127	JA 132	148	JA 237	JA 82	JA 65	JA 65	39
17	36	58	JA 49	26	26	26	69	JA 73	JA 65	70	JA 72	110	58	69	50	59	51	61	61	JA 50	92	JA 50	JA 46	JA 41
18	57	JA 51	44	32	24	JA 29	45	56	58	50	61	JA 43	48	44	43	JA 66	79	85	JA 107	93	JA 87	53	80	52
19	69	38	60	60	40	JA 61	82	JA 86	116	63	JA 94	JA 72	95	45	JA 48	JA 51	JA 75	48	JA 41	50	41	JA 49	JA 49	57
20	JA 63	57	41	38	40	27	55	72	JA 85	JA 154	JA 44	JA 46	53	JA 54	49	JA 61	JA 61	JA 69	60	JA 27	36	48	58	58
21	47	JA 39	44	JA 45	40	37	G 60	87	62	56	JA 107	JA 45	58	JA 98	53	JA 89	34	JA 37	JA 65	64	JA 76	92	JA 61	52
22	JA 49	JA 51	40	JA 38	44	JA 190	JA 51	JA 108	60	67	JA 105	JA 65	JA 67	JA 89	76	JA 51	JA 59	JA 83	JA 79	JA 55	58	JA 75	JA 41	JA 45
23	27	28	20	26	G 26	24	32	38	JA 47	60	61	G 41	JA 50	JA 50	69	59	JA 53	JA 50	JA 46	63	56	JA 85	42	EB 16
24	38	25	23	32	27	JA 27	34	JA 51	51	63	86	JA 84	65	JA 65	JA 81	JA 50	35	33	JA 43	70	JA 64	JA 63	94	JA 54
25	JA 100	JA 40	JA 46	JA 39	39	49	59	JA 87	JA 89	JA 65	JA 69	JA 73	76	116	73	JA 63	64	51	55	26	JA 42	35	42	53
26	38	25	20	EB 16	EB 16	G	26	33	38	JA 39	JA 54	JA 62	JA 50	61	JA 41	JA 51	62	JA 67	JA 201	JA 107	49	JA 109	JA 101	46
27	38	JA 27	32	28	EB 16	G	29	JA 53	64	JA 174	94	JA 76	JA 65	72	65	75	JA 44	33	JA 47	42	45	44	26	26
28	24	JA 37	44	JA 51	70	72	JA 51	JA 43	54	59	64	92	JA 140	JA 87	110	JA 73	117	143	JA 107	JA 85	28	JA 43	42	115
29	24	JA 63	JA 61	63	44	JA 28	JA 33	68	74	62	JA 99	72	64	55	40	G 41	JA 35	JA 41	G	24	EB 15	EB 15	28	JA 42
30	38	JA 37	JA 83	JA 47	JA 116	40	38	58	39	JA 109	38	38	43	JA 108	40	JA 48	56	JA 107	92	JA 71	JA 35	39	JA 117	60
31	JA 51	JA 34	JA 51	JA 33	JA 30	32	70	58	JA 53	94	63	G 40	36	41	96	59	JA 77	JA 52	JA 108	56	41	30	22	JA 35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	JA 40	JA 37	40	38	31	31	47	53	JA 60	JA 65	JA 69	JA 66	JA 63	65	64	JA 59	JA 62	JA 64	JA 67	JA 63	JA 49	JA 48	45	48
U Q	JA 57	JA 47	JA 49	JA 52	JA 44	JA 49	59	68	JA 74	JA 100	JA 97	JA 85	JA 76	JA 87	JA 75	73	77	JA 85	JA 107	JA 76	JA 76	JA 75	JA 61	JA 58
L Q	28	27	28	26	26	26	34	43	51	59	61	45	50	50	46	JA 50	JA 46	47	JA 47	39	41	39	35	38

JUL. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	E B 14	E B 14	G 16	G 19	31	G 30	36	35	G 34	G	35	37	37	40	A A 78	A A 88	42	34	21	21	A A 78	A A 108
2	A A 87	29	30	36	30	A A 75	A A 72	36	36	42	A A 61	A A 118	40	36	A A 50	A A 64	A A 85	A A 73	36	30	30	A A 109	A A 100	21
3	22	20	G 20	29	30	28	30	32	34	43	A A 183	A A 97	A A 93	A A 66	A A 72	37	A A 77	41	A A 73	32	30	20	20	29
4	21	17	16	16	G 17	G	29	34	36	A A 100	53	A A 66	42	33	A A 70	42	42	A A 100	34	40	21	22	24	15
5	18	18	20	16	19	28	32	32	40	37	36	36	37	38	42	37	47	34	30	29	24	37	28	22
6	21	21	21	20	G 18	G 19	42	43	47	A A 83	A A 70	46	A A 88	G 35	35	34	33	30	A A 67	A A 71	25	19	22	E B 16
7	E B 15	E B 16	16	E B 14	E B 14	G 21	36	A A 67	44	36	40	45	A A 70	A A 76	36	A A 74	A A 57	32	27	29	23	20	18	21
8	E B 15	E B 16	18	E B 16	E B 16	G	32	A A 40	A A 49	37	A A 61	36	38	A A 66	A A 68	42	G 35	30	34	23	21	E B 16	E B 14	E B 16
9	E B 15	16	E B 14	E B 14	G 20	G 18	35	A A 84	A A 109	A A 116	38	A A 53	A A 61	A A 83	A A 64	A A 73	34	32	32	A A 76	21	20	20	20
10	E A 31	26	15	E B 16	E B 16	A 24	30	46	A A 53	A A 65	A A 66	38	A A 53	A A 60	35	35	35	A A 66	42	23	20	20	18	16
11	16	18	18	E B 14	G 20	29	42	37	52	A A 61	A A 74	A A 45	G 38	G 38	39	A A 65	G 35	34	34	34	A A 75	24	20	22
12	32	E B 16	21	32	G 31	G 21	34	38	A A 85	A A 155	A A 101	A A 100	A A 167	A A 221	A A 223	A A 143	A A 110	E A 42	A A 167	34	A A 133	28	E B 16	21
13	22	31	33	22	G 21	26	29	A	A A 87	A A 117	A A 199	A A 131	A A 119	A A 66	G 35	33	35	30	30	G 20	29	26	28	32
14	15	20	18	G 20	A A 81	E A 35	29	41	A A 62	41	A A 117	A A 85	A A 76	A A 114	A A 167	G 38	35	G 30	31	27	A A 76	A A 55	20	30
15	18	17	19	22	16	26	30	A A 57	A A 63	A A 108	A A 75	A A 89	A A 106	A A 94	A A 91	37	35	A A 108	A A 147	G 24	29	29	26	29
16	26	20	17	E A 22	A 27	E B 28	41	41	A A 70	A A 76	38	G 41	38	40	35	A A 64	E A 45	A A 132	E A 52	52	G 21	21	27	30
17	20	22	22	G 18	G 18	26	A A 69	A A 73	46	A A 70	A A 72	A A 110	37	40	41	42	35	35	38	30	44	30	28	19
18	29	18	20	G 15	18	24	35	42	46	45	A A 61	41	38	G 35	A 39	A A 66	A A 79	42	40	A A 93	29	27	A A 80	A A 52
19	A A 69	18	28	29	22	29	A A 82	57	E A 55	35	36	33	36	39	42	38	38	30	28	30	29	22	28	29
20	29	22	30	29	21	26	35	43	A A 85	A A 154	42	36	36	42	38	36	35	43	40	E B 17	21	32	29	30
21	34	17	23	28	G 20	23	G 43	A A 87	A	37	A A 107	A	A	A A 98	A A 53	A 45	31	30	28	28	A A 76	A A 92	A A 61	A A 52
22	22	21	30	G 23	23	A A 190	38	A A 108	A A 60	49	46	46	A A 67	43	34	G 29	35	34	36	28	28	28	20	22
23	16	16	16	E B 16	G 16	21	28	37	39	34	44	A	42	37	A A 69	39	33	30	29	29	29	22	22	E B 16
24	18	14	17	16	17	G 21	30	35	42	A A 63	A A 86	40	G 33	A A 65	A A 81	35	30	G 26	28	35	16	18	30	30
25	A A 100	22	22	29	27	34	A A 59	45	A A 89	40	42	38	46	A A 116	50	A	45	A 35	34	18	18	20	22	41
26	20	E B 16	E B 16	E B 16	E B 16	G	25	31	36	33	A A 54	A A 62	37	34	36	38	41	36	A A 201	A A 107	24	A A 109	A A 101	28
27	16	22	21	16	E B 16	G	27	A A 33	A A 64	A A 174	A A 94	A A 76	A A 65	A A 72	42	A A 75	30	G 22	20	24	20	20	16	16
28	17	17	20	18	A A 70	19	28	36	42	42	A A 64	A A 92	A A 140	A A 87	A A 110	A A 73	A A 117	A A 143	A A 107	30	22	21	18	29
29	E B 16	16	29	19	20	G 19	28	A A 68	A A 74	A A 62	A A 99	38	A A 64	45	34	G 32	31	31	G	G 17	E B 15	E B 15	20	18
30	18	16	A A 83	18	A A 116	30	30	31	35	36	36	35	36	A A 108	33	A	36	A A 107	A A 92	22	17	20	A A 117	30
31	18	E B 16	17	23	G 18	19	42	41	34	A	38	G 37	33	38	A A 96	46	32	35	E A	21	23	21	17	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	30	31	29	30	31	31	29	31	31	30	31	31	31	31	31
MED	19	18	20	18	20	22	32	41	47	47	A A 61	45	42	45	42	40	35	34	34	29	24	22	22	22
U Q	29	21	23	23	27	28	42	A A 57	A A 64	A A 83	A A 86	A A 87	A A 70	A A 83	A A 70	A A 64	A A 47	A A 66	A A 52	34	29	29	A A 29	30
L Q	16	E B 16	17	E B 16	E B 16	G 21	29	35	39	37	40	38	37	38	36	36	34	30	30	23	21	20	20	19

JUL. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	14	16	14	10	10	17	16	20	18	19	20	20	21	21	16	20	18	14	16	11	15	16	15
2	16	15	15	16	16	17	17	16	17	18	31	31	21	31	28	21	18	18	14	17	17	16	16	16
3	16	14	16	16	14	12	16	18	19	18	18	18	31	22	19	19	19	15	11	16	16	16	16	16
4	14	14	15	15	14	16	13	13	14	19	32	32	32	21	20	20	18	19	15	14	16	14	16	14
5	14	13	14	15	14	15	12	16	21	19	19	18	19	36	19	24	19	18	15	15	16	16	16	16
6	14	15	15	15	14	13	16	16	14	16	22	20	18	18	18	20	16	14	13	15	16	15	15	16
7	15	16	13	13	14	16	13	18	20	18	16	31	22	29	21	19	19	19	15	14	15	16	15	15
8	14	16	15	16	16	12	14	17	14	21	31	32	29	30	30	18	21	15	14	14	16	16	14	16
9	15	15	14	14	14	13	11	15	17	17	20	20	23	20	20	20	20	16	15	16	17	14	14	16
10	15	14	15	15	15	15	15	16	16	19	24	19	30	33	21	20	20	16	14	14	16	14	14	14
11	14	11	14	15	15	16	16	14	18	21	21	22	30	19	21	19	20	15	14	10	16	16	15	16
12	16	16	14	14	14	20	14	19	19	19	20	20	22	31	20	18	23	18	14	12	14	16	16	16
13	16	15	14	16	16	16	17	14	14	23	30	30	22	21	22	22	17	15	14	10	16	15	16	15
14	14	14	14	14	16	14	15	16	17	21	18	21	18	21	28	22	20	15	12	12	17	18	15	14
15	14	16	15	14	16	16	14	20	20	20	34	20	19	31	20	19	17	15	19	16	10	15	16	16
16	16	16	16	17	15	13	16	20	16	22	32	29	21	31	30	20	18	18	14	14	16	15	15	16
17	16	15	17	13	15	14	17	17	17	18	29	30	30	30	21	21	22	17	16	15	12	14	14	14
18	14	14	14	14	16	15	14	16	16	32	31	20	30	24	28	22	19	19	14	16	17	16	15	15
19	14	16	16	15	15	14	14	15	16	16	22	16	21	24	22	16	16	14	13	15	15	15	15	16
20	16	16	15	16	15	16	15	16	17	18	18	29	29	29	18	16	16	16	16	17	15	16	16	16
21	15	16	16	16	16	15	15	15	22	19	28	31	30	29	28	22	15	14	12	15	15	16	16	14
22	16	16	16	16	16	16	15	17	23	16	23	22	22	22	21	19	17	14	13	15	15	17	16	16
23	15	15	16	16	14	15	15	15	15	17	22	34	29	29	21	22	16	14	14	14	15	15	15	16
24	15	14	15	16	16	15	15	11	17	16	18	19	23	18	29	20	18	16	14	16	16	16	16	16
25	16	16	16	15	15	15	14	14	17	17	18	19	16	22	21	15	15	15	14	16	16	16	16	17
26	16	16	16	16	16	16	14	14	14	14	18	22	29	22	19	15	17	14	12	17	16	16	15	15
27	15	16	16	16	16	16	16	14	14	18	17	17	24	20	16	11	14	14	10	10	10	16	16	16
28	16	15	16	17	17	16	16	14	16	16	16	19	28	22	15	16	16	15	10	17	16	15	15	18
29	16	16	17	16	16	13	12	16	16	16	16	23	17	22	14	16	16	16	16	15	15	15	15	15
30	15	16	15	16	15	16	14	16	16	16	20	26	18	25	20	20	16	16	14	15	13	14	16	16
31	15	16	16	16	16	16	14	16	15	17	30	29	17	18	15	15	16	14	10	13	16	16	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	16	15	15	15	16	17	18	21	22	22	22	21	19	18	15	14	15	16	16	15	16
U Q	16	16	16	16	16	16	16	17	19	19	30	30	29	30	22	21	20	18	15	16	16	16	16	16
L Q	14	14	14	14	14	14	14	14	15	16	18	19	19	21	19	16	16	14	13	14	15	15	15	15

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	308	320	F 290	F 340	337	288	291	279	317	325	293	R 266	303	312	296	321	A	A	202	325	322	307	A	A
2	A	F 307	F 275	F 304	311	A	A	297	330	R 317	A	A	R	R	A	A	A	A	319	337	318	A	A	282
3	F 303	F 313	F 335	295	289	F 330	363	345	334	311	A	A	A	A	A	222	A	228	A	316	312	305	313	307
4	293	293	295	293	308	297	348	314	316	A	332	A	323	308	A	R 310	295	A	296	258	318	314	306	306
5	300	297	321	295	305	281	315	353	305	334	G	280	R 269	R	R 275	314	312	293	R 342	333	328	309	309	302
6	294	F 290	F 288	F 312	323	325	320	329	358	A	A	301	A	322	315	308	325	316	A	A	310	298	317	322
7	315	321	317	307	314	333	330	A	347	313	333	G	A	A	302	A	A	291	326	319	302	292	297	316
8	279	299	299	272	288	269	283	A	A	G	A	R 272	G	A	A	295	246	302	273	294	286	297	310	330
9	313	312	277	271	278	297	296	A	A	A	G	A	A	A	A	A	306	274	306	A	304	292	298	326
10	284	276	334	323	305	333	270	R 287	A	A	A	G	A	A	G	R 277	362	A	228	310	301	290	299	294
11	F 297	311	302	294	303	281	267	323	265	A	A	A	270	314	287	A	305	305	220	R 209	A	295	294	307
12	R 265	306	293	300	300	300	314	A	A	A	A	A	A	A	A	A	A	292	A	256	A	295	287	293
13	311	294	Z 300	283	F 295	283	312	282	A	A	A	A	A	A	G	304	298	315	297	311	312	295	298	307
14	312	F 296	F 291	291	A	287	332	G	A	322	A	A	A	A	A	329	313	299	322	288	A	A	344	299
15	297	297	287	313	329	311	300	A	A	A	A	A	A	A	A	280	295	A	A	331	290	291	302	302
16	281	301	308	301	285	282	250	251	A	A	279	293	261	G	277	A	298	A	R	310	309	299	319	269
17	F 294	F 286	F 288	F 302	F 269	271	A	A	305	A	A	A	323	306	319	333	285	318	310	309	317	284	286	305
18	287	308	289	307	299	276	290	293	321	334	A	G	G	376	280	A	A	304	305	A	317	316	A	A
19	A	F 302	F 302	324	F 327	324	A	279	334	321	298	317	296	300	344	308	319	307	300	317	332	288	315	303
20	303	F 306	F 265	F 292	F 300	301	314	343	A	A	334	301	250	310	265	275	284	279	318	319	319	306	297	284
21	329	302	288	297	303	331	285	A	347	325	A	310	301	A	A	292	323	306	301	317	A	A	A	A
22	263	281	F 271	279	323	A	239	A	A	327	333	294	A	318	305	309	306	304	308	307	291	319	331	322
23	289	282	268	277	309	255	317	318	330	304	311	333	291	276	A	326	316	309	310	321	300	319	302	319
24	292	294	315	F 289	343	268	G	301	332	A	A	288	G	A	A	332	331	321	335	242	296	302	308	308
25	A	F 294	F 282	F 311	F 336	278	A	298	A	342	G	273	322	A	315	313	327	314	301	303	307	294	296	302
26	C	309	282	297	319	295	312	R	311	325	A	A	348	296	U R 297	273	316	300	A	A	317	A	A	F 296
27	F 317	320	F 295	296	300	333	335	356	A	A	A	A	A	A	299	A	329	329	324	314	328	312	332	318
28	320	319	333	312	A	362	269	329	339	331	A	A	A	A	A	A	A	A	A	309	336	327	F 303	F 293
29	F 310	330	286	292	311	322	275	A	A	A	A	297	A	312	G	262	280	308	332	337	307	311	312	278
30	F 303	296	A	345	A	343	308	321	341	329	354	273	296	A	299	311	330	A	A	316	335	317	A	310
31	326	F 291	F 298	295	F 305	307	370	254	F 231	346	R 268	R 268	R 272	268	A	307	314	323	233	319	302	330	346	329
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	31	30	31	28	29	27	21	18	17	13	18	17	14	18	22	24	23	23	27	27	27	25	28
MED	300	301	292	297	305	297	308	301	330	325	298	284	291	309	296	308	312	305	306	314	312	302	306	306
U Q	312	311	302	311	321	328	320	329	339	332	333	301	312	314	305	314	324	315	322	319	319	314	316	317
L Q	289	294	286	292	300	281	275	280	311	315	G	G 268	G 256	296	G 275	280	296	293	296	303	302	294	298	295

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						380	A	393	412	385	L 394	L	392	L	L	L	A	A	A					
2					A	A	A	L	L	L	A	A	L	L	A	A	A	A	A					
3				A	A	L	375	L	L	A	A	A	A	A	A	A	A	A	A	A	A			
4					A	U L 353	369	L	361	A	A	A	A	381		L	A	A	A	A	A			
5						L	A	352	U L 400	434	400	431	L	A	A	L	A	L	354	A				
6					L	L				A	A	A	A	390	387	417	361	L	A	A	A			
7					L	L	A	A	A	386	L	333	A	A	A	A	A	343	L					
8					L	373	A	A	A	409	A	L	R 388	A	A	A	A	345	A	A	A			
9					A	A	A	A	A	A	436	A	A	A	A	A	L	L	A	A				
10						L	L		A	A	A	406	A	A	L	L	371	A						
11						L	A	A	A	A	A	A	L	391	391	A	A	L	L	A	A			
12						L	L	L	A	A	A	A	A	A	A	A	A		A	A	A			
13					A	323	366	A	A	A	A	A	A	A	377	L	372	370	L	L					
14					A		364	350	A	426	A	A	A	A	A	L	L	347	L		A			
15						L	L	A	A	A	A	A	A		A	L	L	A	A					
16						344	A	A	A	A	L	376	393	393	399	A	A	A	A					
17						348	A	A	A	A	A	A	L	375	407	L	A	350						
18						348	L	A	A	A	A	R 427	410	L	A	A	A	A	A	A				
19				A 325		A	A	L	A	L	L	L	L	401	L	L	A	369	L					
20						364	A	A	A	A	344	L	A	L	L	A	L	A						
21							A	A	A	A	A	A	A	A	A	A	L	L	L		A			
22						A	L	A	A	A	A	A	A	A	A	L	L	L	A					
23						L 336	370	A	L	431	L	A	377	L	A	L	357	L	350	A				
24						330	379	321	351	A	A	419	404	A	A	L	368	358	355	326				
25				A	A	A	A	A	A	L	L	438	A	A	L		A	379	L					
26						L	374	395	L	L	A	A	399	L	L	L	L	L	A	A				
27						362	L	375	A	A	A	A	A	A	A	A	359	377	L					
28					A	L	387	A	A	A	A	A	A	A	A	A	A	A	A					
29						A	L	A	A	A	A	L	A	A	L	L	L	L	568					
30					A	A	L	A	L	L	L	L	L	A	381	A	A	A	A					
31				A		L	A	L	L	A	L	L	L	396	A	A	L	L	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1		11	8	6	4	6	4	7	7	7	6	1	6	9	4	1				
MED				A 325		348	372	364	380	418	397	419	393	391	389	417	364	358	354	326				
U Q						364	377	393	406	431	418	431	404	396	399		371	374	462					
L Q						336	368	350	356	386	369	376	388	381	381		359	346	352					

JUL. 2016 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						250	330	390	312	300	352	474	364	348	360	330	A	A	646					
2					E A 300	A	A	374	298	344	A	A	386	A	A	A	A	A	270					
3				296	332	266	252	294	338	320	A	A	A	A	A	E A 672	A	534	A	E A 328	248			
4					A	340	262	328	324	A	A 308	A	308	354		358	344	A	A 328	A 266	234			
5						380	320	270	312	312	G	424	442	A	438	318	A	352	378	250				
6					272	258				A	A	368	A	302	332	328	328	320	A	A	250			
7					308	256	282	A	A	356	296	G	A	A	348	A	A	348	266					
8					310	402	396	A	A	G	A	420	G	A	A	388	A	352	A	316	288			
9					A	356	346	A	A	A	G	A	A	A	A	A	364	404	312	A				
10						308	426		A	A	A	G	A	A	G	408	248	A						
11						360	E A 472	308	E A 408	A	A	A	434	338	412	A	348	318	598	562	A			
12						334	352	A	A	A	A	A	A	A	A	A	A		A	414	A			
13					264	388	352	E A 398	A	A	A	A	A	A	G	374	366	326	326	268				
14					A		286	G	A	314	A	A	A	A	A	300	336	338	278		A			
15						354	368	A	A	A	A	A	A		A	400	354	A	A					
16						366	A	312	A	A	428	370	392	G	430	A	E A 356	A	A					
17						344	A	A	316	A	A	A	322	366	342	302	374	292						
18						384	384	342	284	A	A	G	G	218	436	A	A	352	E A 322	A				
19				284		286	A	412	260	286	300	300	368	384	290	328	314	314	296					
20						266	294	262	A	A	298	368	A	302	392	354	328	314						
21							348	A	278	304	A	356	346	A	A	382	322	322	306		A			
22						A	522	A	A	A	288	A	A	310	A	344	344	320	310					
23						448	284	302	302	380	370	304	392	420	A	278	322	316	304	A				
24						444	G	362	322	A	A	396	G	A	A	318	304	312	276	512				
25				278	240	E A 402	A	328	A	280	G	414	288	A	326	326	286	296	302					
26						328	350	362	338	332	A	A	294	356	344	398	328	300	A	A				
27						262	278	246	A	A	A	A	A	A	376	A	314	292	264					
28					A	234	418	312	288	314	A	A	A	A	A	A	A	A	A					
29						232	414	A	A	A	A	372	A	348	G	424	376	290	248					
30					A		356	316	274	294	272	398	344	A	338	294	288	A	A					
31				A		264	A	436	258	A	436	446	438	438	A	352	318	292	E A 536					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				3	7	26	24	20	16	14	13	17	17	14	17	22	22	22	19	8	4			
MED				284	300	334	350	325	304	314	352	398	386	351	376	342	328	319	304	U 307	249			
U Q				296	310	380	405	382	323	344	G	G 460	G 440	384	G 437	388	354	348	328	463	269			
L Q				278	264	264	290	305	281	300	297	368	333	310	340	318	314	300	276	267	241			

JUL. 2016 h'F2 (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	254	258	Q 262	240	224	210	A	210	198	200	194	190	202	202	216	E A 278	A	A	A	228	228	234	A	A
2	A	280	Q 334	E A 314	A	A	A	244	A	A	A	A	218	188	A	A	A	A	A	244	244	A	A	272
3	272	248	234	A	A	234	210	204	240	A	A	A	A	A	A	A	A	A	A	A	A	224	240	244
4	264	266	256	280	A	208	228	212	214	A	A	A	A	204	A	A	A	A	A	A	A	250	244	244
5	272	250	256	264	264	248	A	212	248	202	186	168	184	A	A	E A 244	A	244	214	A	226	278	254	216
6	250	298	250	242	242	216	294	284	284	A	A	A	A	186	180	198	206	A	A	A	A	250	240	226
7	234	234	232	266	236	208	A	A	A	198	216	288	A	A	A	A	A	232	A 220	230	258	258	282	222
8	254	246	Q 272	286	260	212	A	A	A	182	A	194	198	A	A	A	A	206	A	A	A	234	234	248
9	242	234	282	300	A	A	A	A	A	A	192	A	A	A	A	A	208	234	A	A	244	246	262	230
10	A	268	220	238	260	224	202	414	A	A	A	194	A	A	202	202	202	A	A	238	256	274	244	262
11	258	236	250	256	254	E A 268	A	A	A	A	A	A	E A 256	202	202	A	A	240	230	A	A	260	222	256
12	228	236	220	A	204	196	A	A	A	A	A	A	A	A	A	A	A	350	A	A	A	276	258	230
13	220	A	300	Q 276	A	238	218	A	A	A	A	A	A	A	202	196	196	202	220	202	A	270	270	260
14	224	266	266	278	A	340	204	284	A	204	A	A	A	A	A	218	218	206	A	258	A	A	218	296
15	294	272	270	268	260	256	218	A	A	A	A	A	A	A	A	A	228	A	A	234	276	304	274	286
16	274	274	238	232	A 304	248	A	A	A	A	186	212	194	216	192	A	A	A	A	E A 290	228	242	276	A 254
17	Q 286	278	258	252	252	222	A	A	A	A	A	A	194	204	204	A	A	E A 252	278	246	260	292	Q 264	256
18	278	244	244	288	282	232	A 330	A	A	A	A	192	192	192	A	A	A	A	A	A	248	218	A	A
19	A	250	292	280	208	A	A	298	A	178	198	198	198	200	200	200	A	218	232	232	216	254	258	252
20	262	278	284	268	282	212	A	A	A	A	A	194	A	210	196	A	196	A	226	234	226	256	224	A
21	252	230	296	254	264	240	A	A	A	A	A	A	A	A	A	A	184	212	214	232	A	A	A	A
22	246	234	A	284	244	A	A	A	A	A	A	A	A	A	A	A	A	236	A	242	242	242	224	236
23	254	268	308	272	226	226	200	A	226	186	208	A	A	182	A	208	198	224	A	A	260	232	260	220
24	222	238	232	246	254	226	212	A	E A 276	A	A	214	178	A	A	208	208	208	208	272	268	236	226	208
25	A	272	Q 272	A	A	A	A	A	A	A	218	A 234	A	A	A	A	A	A 234	A	238	238	260	248	288
26	226	244	254	254	254	202	202	202	E A 240	200	A	A	200	210	194	224	238	238	A	A	236	A	A	242
27	234	248	248	242	260	208	220	208	A	A	A	A	A	A	A	A	206	200	A	232	206	250	242	248
28	254	254	254	218	A	206	206	A	A	A	A	A	A	A	A	A	A	A	A	222	222	224	264	276
29	254	240	288	270	256	A	226	A	A	A	A	226	A	A	220	190	200	240	202	222	244	244	256	292
30	266	238	A	208	A	234	234	A	208	208	192	178	H 186	A	200	A	A	A	A	220	222	236	A	300
31	252	254	254	A	246	204	A	300	214	A	198	198	186	204	A	A	208	222	A	236	254	228	222	222
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	29	27	22	25	15	12	10	9	10	14	13	13	12	11	14	19	10	20	22	27	25	27
MED	254	250	256	265	254	223	218	228	224	200	196	196	194	202	201	204	206	228	220	234	243	250	248	248
U Q	266	268	283	280	260	239	228	291	248	203	208	214	201	207	203	E A 224	208	240	230	243	256	260	263	272
L Q	234	238	246	242	242	208	204	209	214	184	192	192	186	190	195	198	198	208	214	229	226	234	230	230

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					116	116	116	116	90	94	100	102	102	114	114	114	106	114	116		112			
2				A 112	A	110	102	102	102		B 102		102	A	102	102	104	104	A	A	A			
3			112	112	112	108	A	108	104	100	100	100	A	100	A	100	100	112	112	A	A			
4				A 112	124	114	114	114	114	A	A		100	110		A	110	114	114	A	A			
5				B	128	120	122	110	106	104	104		B	B	104	98	102	102	110	A	A			
6			A	A 106	112	110	110	100	100	100	100		90	96	86	98	102	100	110	A	A			
7				B	B 104	104	104	96	96	96	A		96	A	A	A	100	100	110	110	110			
8				B	B 110	110	108	108	108	A	A		A	A	108	102	94	100	A	108	A			
9			114	B	114	112	104	104	A	A	94	102	102	100	A	A	106	106	106	106	A			
10				B	B 112	112	112	104	104	104	96		96	A	96	96	102	110	110	110	A			
11				128	98	110	110	104	104	104	104	104	110	104	104	104	104	104	98	98	A			
12				98	98	108	108	102	102	102	102	94	84	A	90	94	100	100	100	104	A			
13				100	90	96	106	106	106	98	A	A	98	98	98	A	A	98	102	102	A			
14				108	A	A	108	102	102	102	90	90	96	100	106	106	106	110	104	A	A			
15				A	A	108	108	102	98	94	A	94	94		94	102	102	102	102	114	102			
16				A	A	110	110	100	92	92	A	A	A	A	A	92	102	108	108	A	A			
17				94	94	112	114	112	100	100	86	100	100	112	86	86	106	A	94		A			
18				94	A	108	108	98	98	B	B	98	B	98	98	104	104	104	A	A	A			
19				A	A	88	94	100	100	92	A	A	A	A	102	102	92	96	96	A	A			
20				A		92	104	104	104	98	88	A	A	94	A	A	A	A	A	A	A			
21				A	94	94	100	100	100	102	96	96	A	A	A	A	98	98	104	A	A			
22				106	110	A	98	98	98	98	A	A	98	98	A	98	A	98	106	A	A			
23				A	116	108	108	104	104	104	94	A	A	A	A	A	A	102	102	A	A			
24				A	A	110	110	104	94	94	94	94	94	88	90	96	104	104	104	A				
25				A	A	104	94	104	104	104	104	102	100	A 298	A		A	92	104	A	A			
26				B	B	104	100	100	96	96	96	96	96	96	96	96	106	106	106	A	A			
27				A	B	122	112	102	96	96	96	96	96	88	88	88	94	94	A		A			
28				A	A	A	A	100	100	100	96	96	96	96	96	96	102	A	A	A	A			
29				A	A	112	110	110	110	110	102	102	102	94	94	100	100	100	104	110	B			
30				A	A	A	100	100	92	92	96	104	A	A	98	98	98	104	104	A	A			
31				104	100	A	100	108	106	100	A	100	100	100	100	100	100	100	100	A	A			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			2	9	14	25	29	31	30	29	21	22	21	19	21	23	26	28	25	9	3			
MED			113	104	108	110	108	104	101	100	96	100	98	98	98	98	102	102	104	108	110			
U Q				110	112	112	110	108	104	104	102	102	101	104	103	102	104	106	110	110	112			
L Q				96	98	104	102	100	98	96	94	96	96	96	92	96	100	100	102	103	102			

JUL. 2016 h'E (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	124	106	112	112	110	110	112	114	102	102	106	G	106	126	126	114	116	112	116	116	106	116	108	108
2	108	108	102	102	102	112	102	100	100	94	94	106	98	98	110	104	98	98	100	100	114	106	106	106
3	98	98	98	108	94	102	102	102	102	104	96	96	96	96	90	100	100	100	100	100	104	104	104	98
4	112	96	100	100	100	G	112	112	104	104	104	104	98	106	106	116	116	110	110	110	110	104	104	104
5	104	104	104	114	114	128	116	116	116	102	102	106	140	114	104	108	104	104	110	102	100	100	96	96
6	100	94	94	84	90	112	112	106	106	96	96	96	100	88	96	114	108	100	100	100	106	102	102	B
7	B	94	94	88	90	90	110	98	104	104	94	94	94	94	94	88	114	114	108	108	108	102	102	98
8	92	B	134	B	B	G	116	102	102	106	106	122	104	94	96	104	98	100	100	108	98	B	B	98
9	B	114	114	114	114	110	102	102	102	102	98	98	98	96	96	96	96	108	108	108	98	96	104	104
10	100	100	100	98	98	110	110	102	102	102	100	100	96	96	92	104	104	104	104	110	110	96	96	96
11	96	88	88	122	90	112	110	102	102	98	98	98	96	98	100	92	108	108	104	98	98	104	100	102
12	96	B	96	90	94	102	102	108	102	102	102	96	96	96	96	96	100	100	108	112	100	100	B	86
13	98	90	94	94	82	118	116	102	98	98	104	92	104	94	112	90	98	96	100	100	100	100	94	94
14	100	98	98	98	98	94	108	100	104	104	100	100	100	96	96	122	110	114	106	106	100	100	90	90
15	88	92	92	92	92	100	108	102	102	102	102	88	90	90	90	110	104	104	104	104	104	104	96	96
16	96	96	96	96	96	108	104	100	98	98	98	98	106	96	96	104	102	102	110	100	102	102	102	F 94
17	94	92	92	88	88	106	106	100	100	100	100	100	100	92	92	92	92	92	100	100	100	98	98	94
18	84	94	94	94	94	112	104	100	100	100	100	92	94	94	110	106	106	106	100	100	100	100	100	100
19	92	92	92	92	94	102	102	94	102	96	96	96	96	96	96	110	110	110	110	102	100	110	110	98
20	98	98	94	94	88	114	108	96	96	96	96	96	90	104	88	88	88	88	88	102	102	92	92	92
21	88	88	88	88	88	80	104	100	100	90	96	96	96	96	96	98	114	108	102	102	102	100	104	100
22	100	86	86	94	106	98	110	94	98	98	112	94	94	94	98	90	90	106	106	106	106	106	98	98
23	98	98	102	94	104	104	104	104	104	104	94	94	94	94	90	90	90	114	106	106	104	104	104	B
24	88	88	88	88	88	114	100	100	100	100	92	100	94	94	94	98	104	104	104	104	104	104	104	94
25	94	94	90	90	86	102	102	102	102	102	102	102	92	92	92	92	96	104	104	94	110	110	92	92
26	92	92	88	B	B	G	100	92	92	92	94	100	100	100	100	112	106	112	106	106	106	106	106	94
27	94	94	94	94	B	G	108	108	94	94	88	90	90	90	90	90	90	90	90	90	90	90	90	90
28	90	100	100	100	92	100	100	110	102	98	98	98	98	106	90	96	88	88	88	94	104	92	92	102
29	102	96	92	92	92	116	108	108	96	98	98	110	104	106	106	106	110	102	G	112	B	B	104	104
30	104	104	104	98	98	98	98	98	98	98	98	90	90	104	104	106	106	104	96	96	96	96	98	98
31	92	94	94	94	98	104	104	98	102	102	94	94	94	108	104	110	108	100	100	100	100	100	94	94
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	29	28	27	31	31	31	31	31	30	31	31	31	31	31	31	30	31	30	29	29	29
MED	96	94	94	94	94	106	106	102	102	100	98	97	96	96	96	104	104	104	104	102	102	102	100	98
U Q	100	99	100	100	99	112	110	106	102	102	102	100	100	104	104	110	108	108	108	108	106	104	104	101
L Q	92	92	92	91	90	100	102	100	98	98	96	94	94	94	92	92	96	100	100	100	100	99	95	94

JUL. 2016 h'Es (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Wakkanai

JUL. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.45°10.0'N LON.141°45.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 12	FF 11	F 1	F 1	C 1	C 1	C 2	C 1	C 2	C 2	C 1		C 1	C 1	C 2	CQ 21	CQ 21	CQ 52	CQ 42	L 3	L 4	F 2	F 6	F 7
2	F 3	F 3	F 3	L 4	C 2	C 4	C 5	C 2	C 2	C 2	C 2	C 2	C 1	L 1	C 2	C 2	C 6	C 6	LQ 41	LQ 21	LQ 31	F 6	F 7	F 3
3	F 2	F 4	F 4	C 2	C 2	C 2	L 1	C 1	C 2	C 2	CC 22	CQ 32	C 3	C 3	C 3	C 2	C 2	C 3	C 4	L 8	L 3	F 5	F 3	F 3
4	F 2	F 2	F 1	L 1	C 1		C 1	C 2	C 2	C 3	C 3	L 4	L 2	L 2	L 2	C 2	C 2	C 4	C 7	L 3	L 4	F 3	F 4	F 2
5	F 2	F 3	F 2	L 1	L 1	C 2	C 2	C 1	C 2	C 1	C 2	C 2	C 1	C 1	C 2	C 2	C 2	C 2	C 2	L 2	L 2	F 4	F 3	F 7
6	F 3	F 4	F 2	L 2	C 1	C 2	C 3	C 3	C 2	C 3	C 4	C 2	C 3	C 1	C 1	C 1	C 1	C 3	C 3	L 6	L 4	F 3	F 3	
7		F 3	F 2	L 1	L 1	C 1	C 4	C 5	C 2	C 1	C 2	L 2	CH 42	CH 22	C 2	LL 32	C 3	C 2	C 1	C 3	C 3	F 5	F 3	F 2
8	F 2		F 2				C 1	C 2	C 3	C 2	L 1	L 1	L 1	L 2	C 3	C 2	CQ 21	L 2	L 3	C 4	L 4			F 1
9		F 1	CL 11	C 1	L 4	C 4	C 3	C 4	C 3	L 3	C 2	C 2	C 2	C 3	L 3	L 4	C 2	C 3	CH 21	C 6	L 3	F 4	F 3	F 3
10	F 4	F 5	F 2	L 1	L 1	C 2	C 1	C 2	C 2	C 2	C 2	C 2	C 2	L 2	C 1	C 1	C 1	C 5	C 5	C 2	L 5	F 3	F 3	F 1
11	F 4	F 3	F 2	CL 11	C 1	C 2	C 3	C 2	C 3	C 2	C 2	C 2	C 1	C 1	C 2	C 4	C 2	C 7	C 6	C 6	L 7	F 4	F 4	F 3
12	F 9		F 3	L 3	L 4	CL 11	C 4	C 2	C 5	C 4	C 2	C 3	C 3	L 5	C 4	C 5	C 4	C 3	C 5	C 6	L 5	F 2		F 2
13	F 3	F 3	F 3	C 2	C 1	C 2	C 1	C 2	C 3	C 6	L 2	L 4	L 3	C 2	C 1	C 1	L 1	C 1	C 2	C 2	L 5	F 3	F 4	F 5
14	F 2	F 3	F 2	L 2	L 8	L 2	C 1	C 2	C 2	C 1	C 4	C 3	C 4	C 4	C 6	C 2	C 2	C 1	C 2	L 3	L 9	F 5	F 3	F 4
15	F 3	F 4	F 4	L 3	L 1	C 3	C 1	C 4	C 2	C 3	L 3	L 3	L 4	L 4	L 4	C 2	C 3	C 6	C 7	C 2	C 2	F 2	F 3	F 3
16	F 3	F 4	F 2	L 3	L 3	L 2	C 3	C 3	C 3	C 3	L 1	L 1	L 1	L 2	L 2	C 2	C 4	C 5	C 4	L 3	L 3	F 3	F 3	F 3
17	F 3	F 3	F 3	C 1	C 1	C 2	C 5	C 5	C 2	C 3	C 3	C 4	C 2	L 2	L 2	C 2	L 2	L 2	C 4	L 3	L 3	F 3	F 2	F 3
18	F 3	F 2	F 2	L 2	L 1	C 2	C 3	C 2	C 3	L 1	C 2	C 2	L 1	C 1	C 2	C 2	C 2	C 4	L 4	L 5	L 4	F 2	F 5	F 4
19	F 5	F 2	F 3	L 2	L 2	C 3	C 5	C 3	C 4	C 2	L 2	L 2	C 2	L 2	C 2	C 1	C 3	C 1	C 2	L 4	L 3	F 4	F 5	F 4
20	F 4	F 3	F 5	L 4	L 4	C 2	C 2	C 3	C 3	C 3	C 2	L 2	L 3	C 2	L 2	L 2	L 3	L 2	L 2	L 2	L 2	F 4	F 5	F 6
21	F 5	F 1	F 4	L 3	L 1	L 1	C 3	C 4	C 3	C 2	C 2	C 1	C 2	C 2	C 3	C 2	CL 11	C 2	C 2	L 3	LL 82	F 7	F 7	F 8
22	F 4	F 5	FQ 32	LCQ 22	C 4	L 5	CQ 41	CQ 21	CQ 31	CQ 21	LQ 21	LQ 21	C 3	C 3	C 1	C 2	L 2	CL 12	C 4	L 6	L 6	F 9	F 5	F 3
23	F 3	F 2	F 1	L 2	C 1	C 3	C 1	C 3	C 3	C 1	C 2	L 1	L 2	L 2	L 3	L 2	L 2	CL 22	C 3	L 9	L 3	F 2	F 5	
24	F 3	F 2	F 2	L 1	L 3	C 2	C 2	C 2	C 2	C 3	C 3	C 2	C 2	C 3	C 2	C 2	C 2	C 3	C 3	L 6	L 2	F 6	F 6	F 4
25	F 5	FQ 31	FQ 31	LQ 31	LQ 31	CQ 31	CQ 51	CQ 31	CQ 31	CQ 31	CQ 21	CQ 21	CQ 31	LQ 42	LQ 42	LQ 31	LQ 21	CQ 21	CQ 41	L 2	L 2	F 4	F 5	F 5
26	F 2	F 1	F 1				C 1	C 2	CQ 31	CQ 21	CQ 21	CQ 21	C 1	C 2	C 2	C 2	C 3	C 4	C 4	L 6	L 5	F 5	F 3	F 4
27	F 4	F 3	F 3	L 2			C 2	C 3	C 2	C 5	CQ 42	CQ 31	CQ 21	CQ 31	CQ 31	CQ 41	CQ 21	C 2	L 3	L 3	L 6	F 2	F 2	F 2
28	FF 11	F 3	F 4	L 3	L 4	LL 21	L 2	C 2	C 2	C 2	C 2	C 4	C 2	C 4	C 3	CQ 31	CQ 51	L 5	L 4	L 4	L 3	F 3	F 5	FF 31
29	F 2	F 3	F 8	L 3	L 2	C 2	C 2	C 3	CQ 21	CQ 21	CQ 31	C 2	C 2	C 2	C 2	C 1	C 2	C 2		C 1			F 2	F 3
30	F 5	F 3	F 5	L 3	LL 51	L 3	C 3	C 3	C 2	C 2	C 2	C 1	L 1	L 3	C 2	C 2	C 3	CC 41	C 5	L 5	L 2	F 4	F 4	F 4
31	F 2	F 2	F 2	C 2	C 2	L 2	C 4	C 3	C 3	C 3	L 2	L 2	C 2	C 2	C 3	C 3	C 2	C 3	C 6	LL 32	L 4	F 2	F 1	F 5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	64	62	52	X 48	X 40															X 75	X 63	X 58	X 49	53
2	X 49	51	52	55	X 49															X 64	X 58	66	X 59	61
3	X 56	X 51	X 51	X 51																A	A	65	X 54	58
4	X 60	X 50	51	51	X 42	X 46														X 79	X 80	X 64	X 66	67
5	X 63	X 58	X 54	54	X 47															X 72	X 70	X 60	X 58	X 56
6	X 56	X 51	X 50	X 46	X 44		C													X 67	X 75	X 69	X 61	66
7	66	X 54	54	X 49	X 49															X 76	X 70	X 66	66	68
8	66	X 58	X 54	X 53	X 54															X 61	X 69	X 75	66	X 65
9	X 56	X 54	X 54	57	58															X 60	X 72	X 65	X 61	X 58
10	X 53	X 53	53	53	X 42															X 63	X 64	X 55	58	60
11	X 56	56	50	51	X 43															X 72	X 70	X 62	67	66
12	70	67	X 64	X 51	X 48															X 73	X 78	X 75	X 69	X 68
13	X 68	X 62	66	X 57	X 56															A	X 68	X 63	X 60	X 54
14	X 49	60	55	X 50	51															X 80	X 78	X 73	78	76
15	69	64	66	X 60	62															X 59	X 60	X 60	X 66	67
16	67	66	X 63	X 52	52															X 79	X 72	X 68	69	71
17	70	68	66	67	55															X 76	X 68	66	66	68
18	66	65	X 53	X 53	X 53															X 82	X 88	X 64	X 61	X 62
19	X 55	X 53	54	X 51	X 46															X 84	X 78	X 69	A	62
20	60	54	52	52	49	C														X 90	X 87	A	A	X 59
21	66	65	58	X 52	X 50															X 64	X 64	X 64	67	66
22	X 60	X 57	X 54	X 48	X 46															X 84	X 85	X 80	X 64	X 62
23	X 63	67	67	55	X 51															X 84	82	78	81	80
24	77	X 55	56	54	55															X 58	X 58	X 58	62	X 57
25	X 54	X 52	X 47	49	X 42															X 74	X 75	X 72	X 70	X 70
26	X 67	X 63	X 62	X 59	X 58															X 66	X 69	X 62	X 60	60
27	62	65	64	54	X 47															X 71	X 63	X 55	X 48	X 49
28	X 47	X 44	X 42	X 42	X 37															X 76	X 73	X 60	X 61	X 61
29	X 55	61	63	55	52															X 71	X 55	X 55	X 56	X 52
30	X 53	X 51	X 52	A	A															X 80	X 68	X 59	X 56	52
31	56	52	50	X 42	X 41															X 73	X 77	X 60	X 55	X 48
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	29	1														29	30	30	29	31
MED	X 60	X 57	54	X 52	X 49	X 46														X 73	X 70	X 64	X 61	62
U Q	66	64	63	55	54															X 80	X 78	X 69	66	67
L Q	X 55	X 52	52	X 50	X 44															X 65	X 64	X 60	X 58	X 57

JUL. 2016 fxI (0.1MHz)

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IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	42	34	37	45	A	68	78	59	57	50	57	65	61	57	69	66	69	56	51	42	F
2	43	F	F	F	43	41	51	57	A	A	A	R 47	52	A	A	A	A	A	58	58	52	F	52	F
3	50	45	45	45	40	38	55	62	57	A	A	A	A	43	50	51	52	51	A	A	A	F	48	F
4	54	44	F	F	36	40	49	60	63	A	51	A	55	54	49	55	55	59	A	73	74	58	60	F
5	57	52	48	F	41	45	47	65	57	A	50	46	52	61	58	60	66	69	59	66	64	54	52	50
6	50	45	44	40	38	41	C	68	52	53	54	A	57	61	61	56	49	54	52	61	69	63	55	F
7	F	48	F	43	43	44	47	A	55	60	54	54	48	58	54	56	61	58	60	70	64	60	F	F
8	F	52	48	47	47	42	40	49	A	A	A	A	A	50	58	55	46	48	48	55	65	69	F	58
9	50	48	47	F	F	54	60	46	A	A	A	A	A	A	A	58	55	46	45	54	66	59	55	52
10	47	47	F	F	36	40	50	A	A	A	A	A	A	A	50	50	52	A	A	57	58	49	F	F
11	49	F	F	F	37	39	45	54	78	A	A	A	A	A	70	64	64	62	61	66	64	55	F	F
12	F	F	57	45	41	45	54	54	50	54	55	56	60	59	66	62	58	62	60	67	72	69	63	62
13	62	55	F	51	50	51	56	49	51	52	A	A	A	A	58	56	55	51	A	A	62	57	53	48
14	43	F	F	43	F	A	A	50	67	55	57	51	54	62	60	64	62	58	65	74	72	67	F	F
15	F	F	F 50	54	F	54	54	49	A	A	A	A	A	R 52	A	59	69	64	56	53	54	54	59	F
16	F	F	57	46	F	45	53	60	50	47	54	54	60	A	52	59	60	57	67	73	65	62	F	F
17	F	F	F	F	F	46	54	72	71	A	52	A	A	64	64	66	69	72	74	70	62	F	F	F
18	F	F	47	47	47	42	50	60	A	54	A	52	52	56	57	54	A	57	58	76	82	58	55	56
19	49	47	F	45	40	43	A	64	62	67	61	64	60	58	59	58	61	62	74	77	72	63	A	F
20	F	F	F	F	F	C	55	63	68	A	A	62	A	A	A	79	93	96	99	84	80	A	A	53
21	F	F	F	45	44	48	64	67	A	70	A	A	56	53	55	51	54	53	54	58	58	58	F	F
22	53	50	48	42	40	37	A	54	63	62	53	58	53	A	A	A	54	58	68	78	79	74	58	56
23	57	F	F	F	44	38	A	64	A	54	A	A	A	57	62	69	72	65	71	78	F	F	F	F
24	F	49	F	F	F	37	A	A	A	A	52	50	51	A	A	55	54	52	54	52	52	52	F	50
25	48	46	41	F	36	40	47	A	57	A	A	A	58	68	72	74	71	65	60	68	69	66	64	64
26	61	57	56	53	52	42	43	50	47	52	54	57	A	59	53	54	55	60	55	58	63	56	54	F
27	F	F	F	F	41	44	A	A	54	57	52	A	A	A	A	58	58	62	64	64	56	49	42	43
28	41	38	36	36	30	34	47	52	58	55	52	51	50	56	57	59	65	69	76	70	66	54	54	54
29	49	F	F	F	F	A	40	61	A	53	56	A	A	54	52	61	74	89	82	64	49	49	50	46
30	47	45	46	A	A	34	47	58	62	A	A	A	60	66	62	A	A	58	64	74	62	53	49	F
31	F	F	F	36	35	40	A	51	62	51	46	47	A	52	60	62	64	63	56	67	64	54	49	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	14	17	22	28	23	25	21	17	17	15	17	21	24	28	28	29	27	29	29	26	19	14
MED	50	48	48	45	40	42	50	58	58	54	54	54	54	57	58	58	59	60	60	67	64	58	54	52
U Q	54	51	50	47	44	45	54	64	65	61	56	57	59	61	62	62	66	65	68	74	70	63	58	56
L Q	47	45	45	42	36	38	47	50	53	52	52	50	52	54	54	55	54	56	56	58	58	54	49	48

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	UL384	A	A	A	UL480	A	UL444	UL460	A	428	A	A	A					
2						UL316	360	396	A	A	A	UL444	A	A	A	A	A	A	L					
3					A	UL332	A	A	A	A	A	A	A	A	A	UL428	UL412	A	A					
4							UL400	A	A	A	A	A	A	A	A	A	A	A	A					
5							UL380	UL384	A	A	UL444	A	A	A	A	A	UL408	A	L					
6						UL300	C	A	A	436	UL476	A	A	A	U L 432	UL420	A	A	UL372					
7								A	A	A	UL456	UL460	UL444	UL448	UL464	UL432	412	A	UL376					
8						UL292	UL340	A	A	A	A	A	A	UL452	UL444	A	432	UL400	356					
9						A	A	UL412	A	A	A	A	A	A	A	432	A	UL416	A					
10						L	L	A	A	A	A	A	A	A	U L 436	UL440	A	A	A					
11						L	UL368	A	A	A	A	A	A	A	A	444	436	396	L					
12							L	L	UL448	A	A	A	A	464	UL452	A	A	A	A					
13							372	420	432	A	A	A	A	A	A	A	A	A	A					
14						A	A	UL440	444	448	460	UL468	UL476	472	UL468	456	UL440	UL416	A					
15						L	UL368	UL440	A	A	A	A	A	UL468	A	UL444	UL428	A	L					
16						UL296	A	A	A	UL452	UL464	UL468	A	A	UL460	A	A	A	A					
17						L	A	420	A	A	UL472	A	A	A	464	UL452	A	392	A					
18						UL308	UL384	A	A	452	A	UL476	A	A	460	A	A	A	UL424					
19						A	A	UL412	UL448	460	UL472	UL468	480	UL472	468	UL420	424	A	A					
20						C	L	UL420	424	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	A	A	A	A	A	A	UL440	A	A	A					
22						UL324	A	UL412	440	452	UL468	456	A	A	A	A	A	A	A					
23						UL276	A	UL568	A	A	A	A	A	A	UL444	UL440	A	A	A					
24						UL284	A	A	A	A	A	UL452	A	A	A	A	A	A	A					
25						UL260	UL364	A	A	A	A	A	A	A	A	A	A	A	A					
26							348	A	UL444	A	UL444	A	A	A	A	UL428	A	A	A					
27							A	A	A	A	448	A	A	A	A	A	A	A	A					
28						A	L	UL396	404	412	UL440	UL436	UL452	UL448	428	UL428	UL412	UL372	UL308					
29						A	UL316	A	A	A	A	A	A	A	UL448	424	UL420	A	A					
30							UL380	L	A	A	A	A	A	A	A	A	A	A	A					
31						A	A	A	A	436	UL428	UL436	A	A	A	A	A	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	13	12	8	8	13	10	5	8	13	16	10	6	5					
MED						UL298	UL368	UL416	442	450	UL460	UL458	UL452	UL462	UL452	UL432	UL422	UL398	UL372					
U Q						UL316	UL382	UL430	UL446	452	UL472	UL468	478	UL470	464	UL442	432	UL416	UL400					
L Q						UL284	354	UL404	428	436	UL444	UL444	UL444	UL450	UL440	UL428	UL412	392	332					

JUL. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
2						R	A	A	A	A	A	A	A	A	A	A	A	A	A					
3					A	A	A	A	A	A	A	A	A	U A 348	A	A	U A 300	A	A					
4							A	A	A	A	A	A	A	A	A	A	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	C	A	A	A	A	A	A	A	A	U R 376	A	A	A					
7						A	A	A	A	A	R	R	A	A	U R 368	R	A	A	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
10						180	U A 236	A	A	A	A	A	A	A	A	R	A	A	A					
11						B	A	A	A	A	A	A	A	A	A	A	R	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						B	A	R	A	A	A	A	A	A	A	A	A	A	A					
14						A	A	A	A	A	A	A	U R 380	R	R	U R 340	A	A	A					
15						B	A	A	A	A	A	A	A	U R 384	A	A	A	A	B					
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
17						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
19						A	A	A	A	A	A	A	A	A	A	R	A	A	A					
20						C	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	A	A	A	A	A	A	328	A	A	A					
22						B	A	A	R	A	A	A	A	A	A	A	A	A	A					
23						A	A	A	A	A	A	A	A	A	U R 348	A	A	A	A					
24						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
26						B	U A 224	A	A	A	A	A	A	A	A	A	A	A	A					
27						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	U A 212	A	A	R	A	A	A	A	U R 344	A	A	A	B					
29						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
30						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
31						A	A	A	A	A	A	A	A	A	A	A	A	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	3						1	2	3	3	1							
MED						180	U A 224						U R 380	U 366	U R 348	U R 340	U A 300							
U Q							U A 236								U R 368	U R 376								
L Q							U A 212								U R 344	328								

JUL. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 48	J A 33	J A 35	J A 62	J A 54	J A 37	35	J A 95	J A 74	J A 108	40	46	44	40	J A 66	38	J A 54	49	J A 84	J A 26	J A 50	J A 63	J A 78	J A 85
2	J A 68	J A 44	J A 45	J A 30	J A 22	G	27	32	J A 84	J A 106	J A 58	42	J A 53	J A 74	J A 124	J A 92	J A 156	J A 252	28	J A 88	J A 26	J A 30	J A 30	J A 52
3	J A 30	J A 80	J A 82	J A 72	J A 72	J A 31	J A 61	J A 46	J A 53	J A 82	J A 82	J A 66	J A 81	42	J A 57	J A 43	41	J A 60	J A 92	J A 145	J A 103	J A 42	J A 68	J A 49
4	J A 45	J A 46	J A 48	J A 43	J A 44	E B 16	33	J A 70	J A 66	J A 132	J A 87	J A 181	J A 67	J A 63	J A 61	54	J A 57	68	76	68	J A 90	117	82	J A 92
5	J A 88	J A 77	J A 38	J A 124	J A 28	J A 27	29	33	J A 44	J A 53	42	J A 49	J A 76	45	J A 55	J A 48	J A 48	J A 42	27	J A 23	J A 34	J A 24	E B 15	J A 40
6	J A 24	J A 32	J A 30	J A 29	J A 27	J A 26	C	J A 45	J A 49	J A 61	J A 78	J A 115	J A 69	J A 51	J A 43	G	J A 58	J A 73	J A 40	J A 37	J A 45	J A 30	J A 72	J A 32
7	J A 62	J A 45	J A 36	J A 24	E B 15	23	37	J A 49	J A 66	J A 67	G	G	J A 48	44	G	G	41	J A 53	J A 34	J A 25	J A 45	J A 22	J A 40	J A 50
8	J A 37	J A 27	J A 22	22	J A 24	24	31	J A 42	J A 48	J A 64	J A 73	43	J A 71	J A 47	41	44	37	J A 44	J A 46	J A 26	J A 30	21	76	J A 44
9	J A 64	J A 23	J A 23	J A 19	J A 26	J A 46	53	J A 47	J A 65	J A 106	J A 117	J A 132	J A 52	J A 65	J A 67	J A 46	J A 50	J A 49	J A 47	J A 38	J A 33	J A 34	J A 39	J A 30
10	J A 48	J A 78	J A 70	J A 38	J A 23	23	32	J A 60	J A 53	J A 131	J A 83	J A 74	J A 73	J A 97	J A 69	G	J A 47	J A 128	J A 127	J A 181	J A 72	J A 65	J A 42	J A 32
11	J A 38	J A 24	J A 29	J A 26	J A 23	J A 24	J A 42	J A 46	J A 53	J A 80	J A 102	J A 52	J A 74	J A 81	J A 75	J A 43	G 28	33	29	J A 30	J A 32	J A 45	J A 58	J A 94
12	J A 55	J A 74	J A 77	J A 51	J A 60	J A 52	J A 66	J A 49	38	44	48	52	50	45	43	J A 68	J A 65	J A 60	J A 86	J A 46	J A 62	J A 54	J A 47	J A 54
13	J A 68	J A 31	J A 24	21	21	20	28	G	38	J A 52	J A 70	J A 73	J A 130	J A 66	J A 66	J A 64	J A 55	J A 55	J A 94	J A 113	J A 57	J A 36	J A 28	J A 24
14	J A 110	J A 30	J A 71	J A 37	J A 35	J A 71	J A 54	J A 44	J A 46	J A 61	J A 38	J A 38	G	G	J A 42	J A 39	J A 45	J A 51	J A 53	J A 60	J A 120	J A 89	J A 52	J A 60
15	J A 89	J A 39	J A 30	J A 27	J A 19	20	32	J A 63	J A 52	J A 64	J A 54	J A 75	52	45	J A 81	J A 62	38	J A 70	J A 64	J A 97	J A 123	J A 63	J A 64	J A 76
16	J A 54	J A 62	J A 101	J A 56	J A 74	J A 63	J A 111	J A 50	J A 47	40	41	J A 58	48	J A 73	J A 46	J A 51	J A 81	J A 74	J A 50	J A 42	J A 73	J A 107	J A 74	J A 75
17	J A 46	J A 41	J A 32	21	E B 14	J A 27	J A 41	J A 49	J A 87	J A 91	J A 44	J A 102	J A 77	J A 68	J A 54	J A 45	J A 51	J A 56	J A 52	J A 68	J A 90	J A 64	J A 47	J A 92
18	J A 75	J A 47	J A 26	J A 36	J A 31	J A 29	J A 50	J A 47	J A 95	J A 47	J A 67	J A 80	J A 63	J A 66	46	J A 81	J A 135	J A 186	J A 175	J A 62	J A 46	J A 37	J A 54	J A 30
19	J A 28	J A 30	J A 24	24	21	J A 30	J A 75	J A 41	J A 42	J A 49	J A 47	42	40	J A 47	J A 48	G	J A 44	J A 46	J A 38	J A 63	J A 120	J A 90	J A 105	J A 43
20	J A 47	J A 40	J A 30	J A 34	J A 30	C	J A 30	J A 36	J A 44	J A 114	J A 77	J A 62	J A 74	J A 96	J A 82	J A 78	J A 48	J A 78	J A 101	J A 193	J A 112	J A 111	J A 86	J A 72
21	J A 60	J A 38	J A 33	J A 36	J A 60	J A 85	J A 61	J A 66	J A 132	J A 112	J A 65	62	49	44	J A 50	38	J A 47	J A 47	J A 44	J A 23	J A 29	J A 32	J A 36	J A 25
22	23	J A 21	J A 17	J A 35	J A 22	21	J A 53	J A 37	G	40	40	43	46	J A 61	J A 120	J A 105	J A 42	J A 46	J A 34	J A 37	J A 31	J A 32	J A 25	J A 44
23	J A 24	J A 28	J A 53	J A 40	J A 34	J A 28	J A 74	J A 66	J A 108	J A 108	J A 162	J A 132	J A 106	J A 50	G	J A 41	J A 50	J A 60	J A 57	J A 80	J A 113	J A 57	J A 44	J A 61
24	J A 88	J A 82	J A 65	J A 34	J A 22	J A 31	J A 78	J A 79	J A 131	J A 77	44	44	45	J A 68	J A 86	J A 63	J A 62	J A 71	J A 50	J A 58	J A 111	J A 51	J A 42	J A 54
25	J A 36	J A 26	J A 22	21	E B 14	J A 19	J A 33	J A 76	J A 73	J A 120	J A 130	J A 142	J A 59	J A 50	J A 55	J A 64	44	J A 49	J A 43	J A 44	J A 42	J A 30	J A 31	J A 59
26	J A 52	J A 34	J A 26	J A 37	J A 26	J A 29	J A 32	J A 44	J A 46	43	46	J A 57	J A 107	J A 43	J A 78	J A 41	J A 74	J A 84	J A 54	19	J A 34	J A 41	J A 70	J A 47
27	J A 72	J A 40	J A 37	J A 92	J A 37	J A 87	J A 104	J A 90	J A 57	J A 79	J A 43	J A 80	J A 97	J A 73	J A 66	J A 53	J A 58	J A 74	J A 46	J A 42	J A 34	J A 34	J A 25	22
28	J A 26	J A 28	J A 27	J A 45	J A 34	J A 37	27	34	36	G	J A 56	44	J A 47	J A 46	J A 29	37	37	28	J A 35	E B 15	E B 15	B J 29	J A 24	J A 25
29	J A 65	J A 89	J A 69	J A 36	J A 38	J A 64	25	J A 44	J A 66	J A 63	J A 66	J A 84	J A 118	J A 54	J A 47	J A 44	J A 47	J A 56	J A 74	J A 52	J A 35	J A 35	19	E B 15
30	J A 25	J A 38	J A 58	51	J A 48	J A 29	J A 29	34	J A 44	J A 146	J A 267	J A 142	J A 84	J A 56	J A 66	J A 74	J A 77	J A 50	J A 44	J A 30	J A 35	J A 42	J A 42	J A 46
31	J A 58	J A 57	J A 64	J A 98	J A 87	J A 43	J A 56	J A 57	J A 70	J A 58	39	48	J A 49	J A 45	J A 58	J A 53	39	30	24	J A 33	J A 44	J A 30	J A 30	J A 44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 52	J A 39	J A 35	J A 36	J A 28	J A 29	J A 39	J A 47	J A 53	J A 67	J A 58	J A 62	J A 63	J A 51	J A 57	J A 46	J A 48	J A 56	J A 50	J A 44	J A 45	J A 41	J A 44	J A 47
U Q	J A 68	J A 57	J A 64	J A 51	J A 44	J A 43	J A 61	J A 63	J A 73	J A 108	J A 82	J A 84	J A 77	J A 68	J A 69	J A 64	J A 58	J A 73	J A 76	J A 68	J A 90	J A 63	J A 70	J A 61
L Q	J A 36	J A 30	J A 26	26	22	23	31	41	44	52	43	44	48	45	46	39	42	J A 47	38	J A 30	J A 34	J A 30	J A 30	J A 32

JUL. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	28	E B 15	25	20	17	28	30	A A 95	59	49	38	42	39	38	44	33	45	44	28	19	41	34	E B 14	E B 15
2	E B 15	19	16	19	E B 15	G	24	30	A A 84	A A 106	A A 58	40	49	A A 74	A A 124	A A 92	A A 156	A A 252	24	19	17	19	E B 15	29
3	18	32	32	21	36	22	47	35	45	A A 82	A A 82	A A 66	A A 81	41	41	36	34	43	A A 92	A A 145	A A 103	22	37	30
4	28	32	19	21	18	E B 16	30	55	44	A A 132	44	A A 181	46	44	48	49	40	44	A A 76	60	37	37	44	41
5	20	32	16	23	18	18	26	31	38	A A 53	41	42	44	43	45	40	36	36	24	18	18	21	E B 15	28
6	19	26	18	17	19	18	C	41	44	38	40	A A 115	45	44	38	G	39	39	25	20	20	21	32	E B 15
7	30	31	21	E B 15	E B 15	21	36	A A 49	48	53	G	G	39	40	G	G	35	45	28	20	E B 15	E B 15	21	30
8	E B 15	E B 15	E B 15	E B 15	E B 15	22	29	38	A A 48	A A 64	A A 73	A A 43	A A 71	38	39	40	35	30	27	19	E B 15	E B 15	46	20
9	E B 16	E B 16	E B 16	E B 15	E B 15	38	33	33	A A 65	A A 106	A A 117	A A 132	A A 52	A A 65	A A 67	38	46	31	37	31	24	20	18	24
10	28	32	21	17	E B 14	20	27	A A 60	A A 53	A A 131	A A 83	A A 74	A A 73	A A 97	38	G	40	A A 128	A A 127	38	40	38	E B 16	19
11	23	E B 15	18	E B 16	17	19	32	40	49	A A 80	A A 102	A A 52	A A 74	A A 81	57	38	G 27	32	27	26	17	37	36	37
12	35	18	20	17	19	22	25	33	34	42	44	48	47	43	40	57	54	54	44	40	28	18	26	24
13	31	16	E B 13	E B 15	E B 15	18	24	G	36	46	A A 70	A A 73	A A 130	A A 66	44	40	45	41	A A 94	A A 113	39	18	E B 15	18
14	E B 15	20	23	24	26	A A 71	A A 54	37	37	38	36	38	G	G	39	38	38	34	40	36	44	45	33	35
15	24	30	20	E B 15	E B 15	18	28	34	A A 52	A A 64	A A 54	A A 75	A A 52	42	A A 81	37	36	50	19	48	38	33	36	34
16	20	16	26	27	19	20	38	36	40	37	40	44	44	A A 73	41	45	44	42	41	28	22	31	37	40
17	34	28	20	E B 15	E B 14	19	35	34	62	A A 91	39	A A 102	A A 77	54	38	36	42	32	44	38	36	32	31	26
18	30	E B 15	19	18	19	22	34	38	A A 95	37	A A 67	41	42	44	39	41	A A 135	39	25	21	27	21	30	16
19	E B 16	21	E B 15	E B 15	E B 15	22	A A 75	31	36	38	37	40	38	40	40	G	34	41	32	53	33	44	A A 105	E B 15
20	E B 15	18	16	18	E B 15	C	26	30	36	A A 114	A A 77	55	A A 74	A A 96	A A 82	58	44	68	38	45	35	A A 111	A A 86	39
21	18	22	21	26	19	38	52	55	A A 132	56	A A 65	A A 62	46	40	40	36	41	44	38	18	15	22	21	16
22	E B 15	E B 15	E B 15	17	E B 15	18	A A 53	30	G	36	36	40	45	A A 61	A A 120	A A 105	38	42	30	30	22	22	E B 15	33
23	19	17	31	32	17	20	A A 74	50	A A 108	45	A A 162	A A 132	A A 106	44	G	34	44	54	50	29	32	26	32	38
24	39	30	36	E B 15	E B 15	20	A A 78	A A 79	A A 131	A A 77	43	41	44	A A 68	A A 86	42	39	40	42	39	40	22	E B 16	20
25	28	18	E B 15	E B 15	E B 14	17	28	A A 76	51	A A 120	A A 130	A A 142	45	44	43	59	40	39	38	37	32	22	23	26
26	19	17	17	22	E B 15	25	26	38	39	40	39	50	A A 107	39	42	37	40	50	32	17	18	17	35	E B 15
27	29	17	17	21	20	26	A A 104	A A 90	48	43	36	A A 80	A A 97	A A 73	A A 66	49	52	45	38	20	28	18	E B 15	E B 15
28	E B 14	E B 16	E B 15	E B 15	22	26	25	30	34	G	40	41	38	37	G 29	36	34	28	25	E B 15	E B 15	E B 14	17	E B 15
29	E B 16	20	20	18	24	A A 64	23	38	A A 66	42	53	A A 84	A A 118	48	40	36	34	41	32	37	22	20	E B 15	E B 15
30	E B 15	E B 15	16	A A 51	A A 48	24	23	31	38	A A 146	A A 267	A A 142	45	50	46	A A 74	A A 77	39	25	21	E B 15	20	18	20
31	23	25	22	17	E B 14	28	A A 56	39	40	37	36	37	A A 49	42	47	46	35	29	22	25	30	20	20	21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	20	18	19	17	17	22	31	38	48	53	44	A A 52	47	44	42	38	40	41	32	29	28	22	23	24
U Q	28	28	21	21	19	26	A A 52	A A 50	A A 62	A A 91	A A 77	A A 84	A A 74	A A 66	A A 57	49	45	45	42	39	37	33	36	33
L Q	E B 16	E B 16	E B 16	E B 15	E B 15	18	26	31	38	38	39	41	44	40	39	36	35	36	25	20	18	19	E B 16	E B 16

JUL. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	16	16	14	13	12	13	14	19	14	16	19	17	16	17	13	14	15	14	14	14	15
2	15	16	15	14	15	14	14	13	15	16	14	17	18	18	20	17	14	14	13	15	14	15	15	15
3	15	15	15	16	15	14	14	12	13	15	20	18	17	15	18	16	14	12	14	15	15	14	15	14
4	14	15	14	14	14	16	13	15	14	14	18	20	23	20	18	17	16	16	16	12	15	15	14	14
5	15	14	14	15	14	14	14	14	16	15	17	21	19	18	15	17	14	12	13	14	14	15	15	16
6	16	16	14	14	15	15	C	15	15	18	16	16	21	20	16	20	16	13	12	14	15	15	15	15
7	16	15	14	15	15	14	14	12	13	14	18	17	21	20	19	18	16	15	13	14	15	15	15	15
8	15	15	15	15	15	14	15	14	18	19	22	18	21	17	19	20	15	14	14	14	15	15	16	16
9	16	16	16	15	15	14	12	13	14	14	16	18	17	16	17	18	16	12	12	14	14	15	15	16
10	15	16	14	14	14	14	15	12	13	16	21	22	18	22	18	13	18	14	14	13	14	14	16	14
11	14	15	15	16	15	14	13	11	14	15	18	18	25	20	18	18	13	14	13	12	14	15	15	15
12	15	15	13	15	14	13	12	14	12	14	15	20	17	18	18	18	14	13	14	14	14	13	14	14
13	15	16	13	15	15	14	13	13	13	11	17	23	17	16	16	17	14	13	14	13	15	15	15	15
14	15	15	14	14	14	13	14	14	13	16	19	18	14	18	14	19	12	13	14	14	14	14	15	16
15	14	14	14	15	15	15	14	12	18	16	16	19	18	21	19	17	16	14	13	13	14	15	15	14
16	15	16	15	15	14	13	15	13	13	14	16	18	18	19	19	16	14	15	14	15	16	15	14	14
17	15	14	14	15	14	14	13	13	14	20	17	18	18	21	19	16	16	14	13	14	15	15	14	14
18	16	15	16	14	15	14	14	13	14	17	16	20	18	19	21	18	15	13	14	13	14	14	15	14
19	16	15	15	15	15	13	14	14	15	17	17	19	18	17	19	16	14	14	14	14	15	15	16	15
20	15	14	15	16	15	C	13	13	16	13	20	22	18	15	16	17	16	14	16	15	15	14	15	13
21	15	14	14	14	14	15	14	13	18	20	22	23	23	20	19	16	16	13	14	14	15	15	14	15
22	15	15	15	14	15	15	13	14	16	17	18	18	17	18	19	18	18	14	12	14	14	14	16	16
23	14	15	15	15	14	14	13	13	14	13	18	27	22	21	17	18	16	11	15	15	15	14	14	15
24	15	15	14	15	15	14	12	13	12	14	18	21	18	18	23	16	16	17	13	15	14	15	16	16
25	16	15	15	14	14	14	13	12	14	15	18	18	17	17	18	20	17	14	15	15	14	15	15	14
26	16	14	15	15	15	14	14	13	14	13	14	18	14	18	17	14	16	14	13	13	15	15	15	15
27	14	15	15	15	14	15	14	12	12	13	14	13	18	17	17	16	13	13	14	14	14	14	15	16
28	14	16	16	15	14	14	13	12	13	13	12	14	18	16	18	15	14	14	12	15	15	14	15	15
29	16	15	15	14	16	15	13	14	12	15	12	16	18	16	16	15	13	13	13	14	15	14	15	15
30	15	15	15	15	14	14	14	12	14	14	14	13	16	16	14	15	14	14	14	15	15	15	16	16
31	16	14	15	15	14	14	14	13	13	12	12	16	17	17	17	17	14	13	14	15	14	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	15	15	14	14	13	14	15	17	18	18	18	18	17	15	14	14	14	15	15	15	15
U Q	16	15	15	15	15	14	14	14	15	16	18	20	19	20	19	18	16	14	14	15	15	15	15	16
L Q	15	15	14	14	14	14	13	12	13	14	15	17	17	17	17	16	14	13	13	14	14	14	15	14

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	320	323	324	289	A	346	381	291	329	277	295	333	308	304	327	321	332	331	331	279	F
2	317	F	F	F	308	284	325	348	A	A	A	R 318	313	A	A	A	A	A	336	341	294	F	283	F
3	303	322	305	288	329	284	312	358	336	A	A	A	A	296	254	292	323	311	A	A	A	F	320	F
4	305	321	F	F	305	340	342	314	350	A	318	A	307	284	307	319	321	329	A	319	328	299	304	F
5	294	298	316	F	314	345	299	362	361	A	333	274	273	316	297	291	311	325	311	327	328	309	299	305
6	296	319	323	305	307	304	C	363	329	324	256	A	313	320	323	319	290	286	299	313	323	321	309	F
7	F	288	F	298	310	379	372	A	325	353	299	302	283	324	278	310	312	317	302	318	312	294	F	F
8	F	298	282	297	273	285	251	325	A	A	A	A	A	253	304	314	298	308	287	285	288	297	F	296
9	283	288	304	F	F	322	367	322	A	A	A	A	A	A	A	303	323	287	278	286	302	318	287	270
10	276	287	F	F	313	302	349	A	A	A	A	A	A	A	277	271	301	A	A	327	314	314	F	F
11	291	F	F	F	299	327	277	300	387	A	A	A	A	A	318	302	317	322	317	324	329	290	F	F
12	F	F	295	308	313	328	346	354	292	297	299	298	283	278	306	310	297	300	290	287	298	283	290	290
13	290	279	F	304	283	337	329	288	293	293	A	A	A	A	302	313	293	271	A	A	312	303	297	293
14	282	F	F	301	F	A	A	319	328	378	318	242	263	288	293	313	317	287	291	304	299	302	F	F
15	F		F	282	F	324	340	315	A	A	A	A	A	R 260	A	293	330	335	322	315	278	272	269	F
16	F	F	292	302		310	308	363	305	275	292	263	315	A	280	313	300	293	311	321	308	305	F	F
17	F	F	F	F	F	298	290	317	324	A	326	A	A	305	290	300	318	325	330	326	303	F	F	F
18	F	F	310	287	286	276	287	305	A	300	A	284	264	301	314	297	A	307	302	309	349	307	290	294
19	294	291	F	304	309	322	A	321	303	338	316	320	306	293	295	290	295	308	321	320	319	329	A	F
20	F	F	F	F	F	C	335	331	369	A	A	322	A	A	A	252	274	293	322	316	344	A	A	287
21	F	F	F	302	302	327	317	328	A	312	A	A	286	292	303	289	316	308	307	311	295	291	F	F
22	307	316	318	303	303	306	A	325	339	339	300	330	290	A	A	A	283	298	289	301	322	325	293	294
23	281	F	F	F	299	288	A	273	A	358	A	A	A	304	316	315	303	293	301	307	F	F	F	F
24	F	296	F	F	F	300	A	A	A	A	330	266	298	A	A	316	324	322	322	331	295	290	F	292
25	309	295	304	F	283	298	297	A	341	A	A	A	286	296	292	315	307	307	305	315	295	294	285	278
26	295	304	289	307	310	314	317	341	279	323	316	327	A	345	285	330	309	320	318	314	303	306	301	F
27	F	F	F	F	320	365	A	A	339	335	290	A	A	A	A	327	313	320	330	348	332	336	305	289
28	300	307	332	309	316	325	345	326	346	343	318	293	246	312	311	307	304	304	333	319	322	315	306	312
29	303	F	F	F	F	A	271	374	A	354	326	A	A	326	279	267	274	319	332	346	324	283	300	298
30	312	318	360	A	A	328	316	327	344	A	A	A	301	316	319	A	A	315	330	332	335	297	307	F
31	F	F	F	317	309	326	A	344	379	324	286	283	A	287	298	308	318	326	326	328	345	324	318	287
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	13	17	22	28	23	25	21	17	17	15	17	21	24	28	28	29	27	29	29	26	19	14
MED	296	298	305	303	308	322	317	326	339	335	316	298	286	296	300	308	308	308	317	319	314	304	299	292
U Q	305	317	320	308	313	328	342	351	348	354	322	322	306	316	312	314	318	322	326	328	328	318	306	296
L Q	290	290	294	298	299	299	290	316	314	306	292	274	275	288	288	292	298	296	301	310	298	294	287	287

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JUL. 2016 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	UL 349	A	A	A	UL 397	A	UL 418	UL 399	A	387	A	A	A					
2						UL 344	370	394	A	A	A	UL 406	A	A	A	A	A	A	L					
3					A	UL 322	A	A	A	A	A	A	A	A	A	UL 399	UL 360	A	A					
4							UL 344	A	A	A	A	A	A	A	A	A	A	A	A					
5							UL 354	UL 398	A	A	UL 429	A	A	A	A	A	UL 373	A	L					
6						UL 337	C	A	A	407	UL 396	A	A	A	UL 398	UL 402	A	A	UL 332					
7								A	A	A	UL 384	UL 451	UL 412	UL 426	UL 425	UL 420	373	A	UL 326					
8						UL 346	UL 368	A	A	A	A	A	A	UL 370	UL 365	A	311	UL 345	331					
9						A	A	UL 359	A	A	A	A	A	A	A	414	A	UL 344	A					
10						L	L	A	A	A	A	A	A	A	UL 320	UL 377	A	A	A					
11						L	UL 296	A	A	A	A	A	A	A	A	380	359	378	L					
12							L	L	UL 405	A	A	A	A	365	UL 375	A	A	A	A					
13							354	377	378	A	A	A	A	A	A	A	A	A	A					
14						A	A	UL 368	384	438	428	UL 401	UL 407	347	UL 389	371	UL 359	UL 347	A					
15						L	UL 367	UL 353	A	A	A	A	A	UL 380	A	UL 369	UL 373	A	L					
16						UL 358	A	A	A	UL 428	UL 441	UL 379	A	A	UL 377	A	A	A	A					
17						L	A	379	A	A	UL 409	A	A	A	396	UL 375	A	387	A					
18						UL 339	UL 366	A	A	409	A	UL 407	A	A	389	A	A	A	UL 338					
19						A	A	UL 387	UL 394	418	UL 440	UL 433	382	UL 394	399	UL 420	367	A	A					
20						C	L	UL 400	432	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	A	A	A	A	A	A	UL 375	A	A	A					
22						UL 327	A	UL 376	377	406	UL 442	376	A	A	A	A	A	A	A					
23						UL 333	A	UL 338	A	A	A	A	A	A	UL 385	UL 379	A	A	A					
24						UL 321	A	A	A	A	A	UL 397	A	A	A	A	A	A	A					
25						UL 331	UL 360	A	A	A	A	A	A	A	A	A	A	A	A					
26							351	A	UL 403	A	UL 384	A	A	A	A	UL 386	A	A	A					
27							A	A	A	A	409	A	A	A	A	A	A	A	A					
28						A	L	UL 387	420	417	UL 433	UL 375	UL 405	UL 366	413	UL 372	UL 399	UL 360	UL 367					
29						A	UL 373	A	A	A	A	A	A	A	UL 338	356	UL 357	A	A					
30							UL 330	L	A	A	A	A	A	A	A	A	A	A	A					
31						A	A	A	A	410	UL 435	UL 427	A	A	A	A	A	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	13	12	8	8	13	10	5	8	13	16	10	6	5					
MED						UL 335	UL 354	UL 378	398	414	UL 428	UL 404	UL 407	UL 375	UL 389	UL 380	UL 364	UL 354	UL 332					
U Q						UL 344	UL 368	UL 390	412	423	UL 438	UL 427	UL 415	UL 396	398	UL 400	UL 373	378	UL 352					
L Q						UL 327	UL 346	UL 364	381	408	UL 396	UL 379	394	366	UL 370	UL 374	359	UL 345	328					

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JUL. 2016 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						E A 262	390	A	E A 274	240	398	316	434	368	304	316	E A 338	276	270					
2						372	314	268	A	A	A	438	E A 382	A	A	A	A	A	264					
3					E A 312	380	E A 314	238	278	A	A	A	A	E A 376	E A 420	378	326	E A 328	A					
4							296	E A 340	250	A	E A 320	A	E A 370	390	E A 398	E A 334	310	E A 296	A					
5							358	244	244	A	340	E A 422	442	324	360	352	320	260	288					
6						342	C	234	324	310	470	A	346	318	322	314	396	384	324					
7								A	E A 308	E A 270	374	368	E A 388	320	436	342	316	E A 310	320					
8						346	488	330	A	A	A	A	A	512	358	320	352	358	366					
9						E A 296	238	336	A	A	A	A	A	A	A	352	E A 310	378	E A 408					
10						324	274	A	A	A	A	A	A	A	450	466	366	A	A					
11						314	412	362	226	A	A	A	A	A	E A 304	320	304	302	292					
12							264	264	418	378	370	400	384	414	332	E A 352	E A 376	E A 338	E A 330					
13							276	394	394	E A 402	A	A	A	A	352	318	388	E A 420	A					
14						A	A	320	280	248	346	R 556	486	360	362	322	302	350	296					
15						304	268	322	A	A	A	A	A	492	A	378	286	E A 278	266					
16						296	310	250	E A 288	442	398	456	346	A	430	334	E A 324	338	E A 280					
17						340	358	288	E A 306	A	338	A	A	E A 348	354	340	306	282	248					
18						394	336	302	A	354	A	402	490	360	354	364	A	322	326					
19						266	A	276	284	266	324	320	338	388	372	320	330	316	266					
20						C	256	294	248	A	A	E A 330	A	A	A	E A 418	320	320	256					
21						E A 270	E A 302	E A 278	A	E A 318	A	A	394	400	362	402	344	E A 332	E A 316					
22						350	A	294	286	272	388	322	E A 400	A	A	A	372	330	308					
23						356	A	428	A	278	A	A	A	356	330	312	300	E A 338	E A 298					
24						338	A	A	A	A	330	460	386	A	A	328	322	E A 304	E A 272					
25						320	348	A	E A 294	A	A	A	404	334	320	E A 290	290	290	E A 284					
26							348	288	428	308	350	E A 318	A	290	E A 364	314	328	E A 304	E A 264					
27							A	A	E A 314	302	370	A	A	A	A	E A 306	E A 368	E A 290	254					
28						E A 304	272	298	272	280	332	388	R 440	348	336	340	322	302	254					
29						A	418	234	A	274	E A 334	A	A	E A 334	434	408	362	262	250					
30							342	286	256	A	A	A	358	310	302	A	A	E A 312	274					
31						E A 288	A	288	228	314	412	450	A	408	340	308	298	268	262					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	20	22	25	21	17	17	15	17	21	24	28	28	29	27					
MED					E A 312	322	314	288	U 270	U 290	350	394	387	358	351	330	320	307	273					
U Q						348	358	326	311	336	393	450	437	395	385	358	357	338	316					
L Q						E A 296	274	266	253	271	333	322	364	329	331	317	308	290	264					

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JUL. 2016 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 302	E B 260	E A 274	E A 234	228	A	222	A	A	A	184	A	202	212	A	226	A	A	A	228	E A 256	E A 262	E B 310	E B 280
2	E B 240	E A 258	E A 308	E A 282	E B 234	218	208	190	A	A	A	206	A	A	A	A	A	A	218	210	222	E A 270	E B 264	E A 290
3	E A 256	E A 278	E A 308	E A 266	A	222	A	A	A	A	A	A	A	A	A	198	222	A	A	A	A	E A 248	E A 314	E A 308
4	E A 272	E A 280	E A 266	E A 296	E A 274	214	E A 246	A	A	A	A	A	A	A	A	A	A	A	A	E A 286	E A 236	E A 244	E A 322	E A 322
5	E A 270	E A 282	E A 248	E A 256	E A 260	210	204	200	A	A	196	A	A	A	A	A	E A 264	A	218	E A 238	220	E A 238	E B 258	E A 300
6	E A 246	E A 272	E A 240	E A 246	E A 268	232	C	A	A	216	204	A	A	A	232	E A 238	A	A	E A 236	272	224	232	E A 262	E B 268
7	E A 288	E A 294	E A 262	E B 260	E B 240	204	228	A	A	A	E A 258	174	214	196	188	186	220	A	E A 248	230	210	E B 254	E A 330	E A 312
8	228	E B 254	E B 276	E B 264	E B 264	E A 248	248	A	A	A	A	A	A	206	E A 268	A	E A 274	220	E A 248	E A 290	E B 250	E B 238	E A 330	E A 258
9	E B 266	E B 284	E B 258	E B 264	E B 294	A	A	232	A	A	A	A	A	A	A	208	A	208	A	E A 300	E A 266	E A 236	E A 258	E A 326
10	E A 324	E A 326	E A 298	214	E B 258	E A 248	230	A	A	A	A	A	A	A	E A 280	232	A	A	A	E A 266	E A 264	E A 302	E B 304	E A 306
11	E A 262	E B 226	E A 242	E B 268	E A 260	230	E A 346	A	A	A	A	A	A	A	A	216	212	220	228	E A 248	218	E A 310	E A 344	E A 348
12	E A 322	E A 284	E A 240	E A 250	E A 272	E A 242	206	218	194	A	A	A	A	220	228	A	A	A	A	E A 284	E A 264	E A 274	E A 274	E A 296
13	E A 294	E B 270	E B 254	E B 254	E B 252	E A 234	206	218	206	A	A	A	A	A	A	A	A	A	A	A	E A 268	E A 240	E B 242	E A 262
14	E B 294	E A 302	E A 294	E A 256	E A 270	A	A	E A 246	218	186	192	212	198	212	212	230	E A 244	244	A	E A 262	E A 276	E A 306	E A 316	E A 304
15	E A 282	E A 292	E A 280	E B 254	E B 266	E A 256	E A 230	230	A	A	A	A	A	232	A	234	224	A	208	E A 336	E A 348	E A 326	E A 322	E A 316
16	E A 282	E A 264	E A 268	E A 300	E A 282	E A 238	A	A	A	200	178	222	A	A	222	A	A	A	A	232	E A 246	E A 270	E A 292	E A 346
17	E A 348	E A 312	E A 266	E B 236	E B 252	236	A	206	A	A	202	A	A	A	194	228	A	216	A	E A 234	E A 264	E A 292	E A 302	E A 302
18	E A 326	E B 266	E A 270	E A 288	E A 278	E A 250	E A 256	A	A	202	A	196	A	A	212	A	A	A	228	E A 252	216	208	E A 288	232
19	E B 250	E A 292	E B 272	E B 252	E B 246	A	A	208	206	188	174	182	E A 234	216	206	212	210	A	A	E A 250	E A 240	E A 256	A	E B 284
20	E B 272	E A 292	E A 286	E A 248	E B 236	C	204	202	188	A	A	A	A	A	A	A	A	A	A	E A 242	224	A	A	E A 316
21	E A 280	E A 304	E A 280	E A 288	E A 256	A	A	A	A	A	A	A	A	A	A	222	A	A	A	E A 246	E B 252	E A 262	E A 270	E A 282
22	E B 250	E B 236	E B 244	E B 266	E A 254	E A 242	A	196	200	188	172	E A 248	A	A	A	A	A	A	A	E A 258	232	224	214	E A 314
23	E A 296	E A 278	E A 246	E A 306	E A 242	E A 268	A	E A 288	A	A	A	A	A	A	206	202	A	A	A	E A 250	E A 258	E A 300	E A 298	E A 272
24	E A 312	E A 274	E A 306	E B 266	E B 280	E A 250	A	A	A	A	A	226	A	A	A	A	A	A	A	E A 266	E A 316	E A 282	E B 268	E A 262
25	E A 274	E A 266	E B 254	E B 268	E B 288	E A 262	220	A	A	A	A	A	A	A	A	A	A	A	A	E A 266	E A 274	E A 252	E A 294	E A 288
26	E A 276	E A 264	E A 278	E A 280	E B 242	E A 242	220	A	216	A	234	A	A	A	A	216	A	A	A	E A 242	E A 240	E A 240	E A 292	E B 238
27	E A 326	E A 280	E A 260	E A 268	E A 258	E A 238	A	A	A	A	184	A	A	A	A	A	A	A	A	208	232	220	E B 258	E B 274
28	E B 258	E B 236	224	E B 246	E A 296	A	214	188	186	214	214	E A 286	212	202	204	216	216	208	222	220	218	234	E A 252	E B 252
29	E B 252	E A 294	E A 300	230	E A 314	A	E A 236	A	A	A	A	A	A	A	268	E A 270	E A 238	A	A	224	218	E A 288	E B 264	E B 252
30	E B 264	E B 238	218	A	A	E A 254	236	222	A	A	A	A	A	A	A	A	A	A	A	224	206	228	E A 246	E A 268
31	E A 300	E A 322	E A 288	E A 252	E B 258	A	A	A	A	190	190	194	A	A	A	A	A	212	208	E A 234	226	224	216	E A 294
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	29	22	18	14	8	8	13	10	5	8	13	16	10	7	10	29	30	30	29	31
MED	E A 276	E A 278	E A 268	E A 262	E B 260	E A 240	216	208	203	195	191	202	207	212	209	218	217	216	219	E A 248	E 240	E A 253	E A 288	E A 290
U Q	E A 300	E A 292	E A 286	E A 268	E A 276	E A 250	E A 236	230	211	208	209	E A 226	224	218	250	231	E A 244	220	E A 236	E A 266	E A 264	E A 282	E A 312	E A 312
L Q	E B 258	E B 264	E A 248	E 250	E B 249	230	208	200	191	188	181	194	200	204	205	210	216	208	218	231	222	236	E 258	E 268

JUL. 2016 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A 114		A	A	A	A	110	110	110	A	110	A	110	A					
2						116	110	A	A	A	A	A	112	A	A	A	A	A	114					
3					A	A	A	A	A	A	A	A	A	118	112	110	114	110	A					
4							112	A	A	A	A	A	A	A	112	112	112	A	A					
5						A 112	114	110	A	110	114	110	A	110	114	110	A	A						
6						A	C	A	A	A	A	A	A	A	A	110	110	A	A					
7						126	124	114	A	A	110	110	116	116	118	118	114	A	A					
8						122	120	114	108	A	A	A	A	A	112	112	A	110	A					
9						118	A	112	A	A	A	A	A	A	A	A	A	A	A					
10						120	110	A	A	A	A	A	A	A	A	114	A	A	A					
11						B	114	112	A	A	A	A	A	A	A	A	112	114	114					
12						A	A	A	A	114	114	114	114	114	114	A	A	A	A					
13						B	118	116	A	A	A	A	A	A	A	A	A	A	A					
14						A	A	A	A	A	A	A	114	112	112	114	110	A	A					
15						B		110	110	110	112	A	112	112	112	110	110	A	B					
16						A	A	A	A	A	A	A	A	A	A	110	A	A	A					
17						B	114	A	A	A	A	A	A	A	A	A	A	A	A					
18						114	A	A	A	A	A	A	A	A	A	112	A	A	A					
19						A	A	A	A	A	A	A	A	A	110	114	114	110	110					
20						C	A	A	A	A	A	A	A	A	A	A	A	114	A					
21						A	A	A	A	A	A	A	A	A	A	110	112	114	A					
22						B	A	A	114	A	A	112	118	A	A	A	A	A	112					
23						A	A	A	A	A	A	A	A	A	112	A	A	116	112					
24						A	A	A	A	A	112	112	114	114	A	A	A	A	A					
25						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
26						B	114	A	A	A	114	110	A	108	114	114	A	A	A					
27						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
28						B	114	114	114	112	A	112	A	A	110	110	112	110	B					
29						A	108	108	A	A	A	A	A	A	A	A	A	A	A					
30						B	A	110	114	A	A	A	A	114	A	A	A	A	A					
31						A	A	A	A	A	A	A	A	110	110	110	110	110	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						6	13	10	6	3	6	8	9	10	13	17	12	10	5					
MED						119	114	113	112	112	112	112	114	113	112	112	112	110	112					
U Q						122	116	114	114	114	114	113	115	114	113	114	113	114	114					
L Q						116	111	110	110	110	110	110	111	110	110	110	110	110	111					

JUL. 2016 h'E (KM)

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	98	110	100	100	100	100	132	104	102	100	100	122	122	112	104	124	106	112	102	106	108	108	108	106
2	98	98	92	92	94	G	110	104	98	96	100	104	122	98	100	102	102	92	116	102	100	98	112	102
3	102	100	100	98	100	98	98	98	98	98	98	98	106	134	120	118	118	104	100	96	88	94	100	100
4	100	96	92	92	94	B	118	102	102	98	102	98	98	98	112	110	114	102	102	102	102	102	102	102
5	100	96	98	96	96	102	128	122	116	106	112	120	116	100	118	116	116	104	104	102	94	94	B	96
6	98	94	92	92	94	110	C	106	106	106	102	96	100	96	100	G	122	104	106	102	100	98	100	104
7	98	94	92	90	B	128	124	116	116	104	G	G	112	114	G	G	128	106	104	104	116	106	106	102
8	132	98	94	100	102	118	122	120	112	106	104	104	104	106	124	116	104	122	106	102	104	96	96	100
9	100	106	106	106	140	114	106	114	106	104	102	98	102	100	98	102	102	100	94	92	98	92	94	106
10	98	96	98	108	104	138	122	106	106	106	102	106	106	100	106	G	106	108	100	100	100	100	100	104
11	96	104	94	94	98	122	118	114	100	100	98	100	100	104	104	104	102	120	116	98	96	110	104	104
12	104	104	104	104	104	104	96	96	96	128	128	116	122	126	122	108	108	104	102	102	100	100	96	96
13	98	96	96	90	92	112	120	G	104	100	100	100	100	100	100	100	98	98	94	88	88	88	94	100
14	102	100	100	98	96	94	94	94	104	104	102	102	G	G	128	124	118	104	104	102	100	100	100	98
15	96	92	92	96	96	122	130	124	118	114	112	108	118	154	114	118	118	104	100	102	102	100	100	98
16	96	96	94	94	100	100	106	102	104	102	102	98	100	96	94	122	108	104	104	100	94	100	98	92
17	94	90	88	106	B	118	114	100	98	98	98	96	96	96	94	98	96	100	104	98	96	94	94	92
18	98	102	100	98	98	114	106	102	102	102	96	100	100	100	102	118	102	100	100	100	96	92	88	88
19	88	88	88	94	94	106	96	100	104	100	104	104	104	104	118	G	122	110	114	100	104	104	98	98
20	96	94	98	98	102	C	104	98	98	98	96	98	96	106	106	92	92	110	102	100	98	96	96	100
21	94	94	88	86	124	98	106	104	104	104	104	108	114	104	98	132	120	114	100	100	98	96	94	98
22	98	104	102	100	122	122	102	106	G	106	106	132	122	98	92	92	96	96	114	88	88	88	86	98
23	98	102	96	96	100	106	106	106	98	98	92	96	98	98	G	100	100	116	112	98	96	104	104	100
24	100	100	100	100	118	108	106	102	98	98	114	120	116	110	104	106	110	106	104	104	102	106	100	98
25	88	92	96	94	B	118	108	102	98	98	96	96	96	96	96	104	94	96	100	94	104	92	96	96
26	98	98	98	94	94	94	124	100	98	98	122	120	106	120	114	120	104	104	108	106	106	102	102	102
27	98	98	100	94	112	98	100	100	100	100	104	102	102	96	116	116	114	88	106	90	90	90	94	104
28	114	114	100	98	98	96	116	116	116	G	94	128	104	100	100	126	118	114	102	B	B	90	112	110
29	104	100	100	100	96	102	120	124	102	102	102	104	102	100	100	100	98	94	92	92	90	90	90	B
30	96	100	100	98	96	96	98	122	118	102	92	96	100	120	104	102	90	102	98	102	102	106	98	100
31	100	98	102	102	102	104	102	100	96	96	100	98	98	120	116	116	116	114	114	106	102	102	102	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	28	28	30	30	30	30	30	30	30	30	29	27	31	31	31	30	30	31	30	30
MED	98	98	98	98	99	106	107	104	102	101	102	102	103	100	104	110	106	104	104	100	100	98	99	100
U Q	100	102	100	100	103	118	120	114	106	104	104	108	114	112	116	118	118	110	106	102	102	102	102	102
L Q	96	94	92	94	96	99	102	100	98	98	98	98	100	98	100	102	100	100	100	98	96	92	94	98

IONOSPHERIC DATA STATION Kokubunji

JUL. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°43.0'N LON.139°29.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F2	F4	F4	F3	L3	C2	L4	L3	L2	L2	C2	C2	C2	L2	CL12	L2	C2	L3	F2	F6	F4	F3	F2
2	F3	F3	F3	F3	F2		C2	L2	L3	L3	L3	L1	C2	L2	L3	L3	L3	L3	CL32	F3	F2	F2	F2	F6
3	F5	F3	F4	F3	F4	L3	L3	L3	L2	L3	L3	L3	L3	C2	C2	C1	C2	L4	L4	F5	F6	F3	F5	F6
4	F7	F5	F4	F4	F2		C3	L3	L2	L3	L3	L2	L2	L2	L2	C3	C2	L4	L5	F7	F4	F5	F4	F5
5	F4	F3	F2	F4	F4	L2	C1	C1	C2	L2	C2	C2	C3	L2	C2	C2	C2	L2	L2	F4	F2	F3		F6
6	F4	F6	F3	F3	F2	L2		L3	L2	L2	L2	L2	L2	L2	L3		CL11	L3	L4	F3	F2	F3	F4	F3
7	F4	F5	F4	F2		C2	C2	C3	C4	L3			C2	C1			C1	L2	L3	F3	F2	F2	F4	F6
8	F3	F3	F2	F1	F3	C4	C2	C2	C2	L2	L3	L2	L2	L2	C2	C1	L2	C1	L3	F2	F2	F1	F5	F4
9	F3	F2	F2	F2	F2	C4	L3	C2	L3	L3	L3	L3	LC31	L3	L2	L2	L3	L2	L4	F4	F4	F3	F3	F3
10	F5	F5	F3	F3	F2	H2	C2	L3	L3	L2	L2	L3	L3	L3	L2		L2	L3	L4	F3	F4	F5	F3	F4
11	F5	F2	F3	F2	F2	C3	C2	C2	L3	L4	L3	L3	L4	L3	L3	L3	L2	CL12	CL22	F3	F3	FF44	F5	F6
12	F5	F3	F5	F3	F3	L3	L2	L2	L2	CL22	CL22	CL22	CL22	C2	C1	L2	L2	L3	L5	F3	F4	F5	F5	F3
13	F4	F2	F2	F2	F1	C1	C1		L2	L3	L3	L3	L3	L4	L3	L2	L3	L3	L4	F4	F4	F5	F2	F3
14	F2	F3	F5	F5	F4	L6	L4	L3	L2	L2	L2	L2			C1	C1	C2	L2	L4	F4	F3	F4	F5	F4
15	F3	F5	F2	F2	F2	C2	C2	C2	C3	C2	C2	L2	C2	H1	C2	C2	C1	L3	L2	F4	F5	F5	F3	F4
16	F2	F3	F3	F3	F4	L2	L2	L2	L2	L2	L2	L2	L2	L2	L2	C2	L2	L2	L3	F4	F3	F3	F5	F3
17	F3	F3	F2	F1		C1	C2	L2	L3	L3	L3	L3	L3	L2	L2	L2	L2	L2	L3	F3	F4	F4	F4	F4
18	F2	F2	F3	F5	F3	C4	L2	L2	L3	L2	L2	L2	L2	L2	L2	C2	L3	L2	L3	F4	F5	F3	F3	F2
19	F2	F3	F2	F1	F1	L2	L3	L2	L2	L1	L1	L1	L1	L2	C2		C2	C2	C3	F5	F4	F4	F5	F2
20	F2	F2	F2	FF22	F3		L3	L2	L2	L3	L2	L4	L3	LL33	LL24	L4	L2	C4	L3	F4	F5	F5	F4	F4
21	F2	F3	F4	F3	FF23	L3	L5	L3	L3	L2	L2	L2	C1	L2	L2	C1	C2	C2	L4	F3	F2	F4	F4	F5
22	F2	F2	F2	F4	F2	C2	L3	L1		L1	L2	CL12	C1	L2	L3	L3	L2	L2	CL32	F4	F3	F2	F3	F6
23	F5	F5	F5	F5	F5	L2	L4	L4	L3	L2	L3	L3	L3	L3		L2	L3	CL43	C5	F3	F3	F5	F7	F6
24	F5	F5	F4	F2	F1	L3	L4	L5	L3	L4	C2	C2	C2	C2	L3	L2	L3	L3	L4	F5	F5	F4	F2	F3
25	F2	F3	F2	F1		C2	L2	L3	L4	L4	L4	L4	L3	L2	L2	L3	L2	L4	LL23	F5	FF44	F2	F3	F3
26	F4	F3	F4	F4	F2	L3	CL23	L3	L3	L2	C2	C2	L3	C2	C2	C1	L2	L3	L4	F4	F4	F4	F4	F4
27	F5	F4	F4	F4	FF13	L5	L4	L3	L3	L3	L2	L3	L3	L3	CL23	CL23	CL33	L4	LL43	F5	F5	F3	F1	F2
28	F2	F1	F3	F2	F5	L3	C2	C2	C1		LC31	CL12	L2	L2	L2	CL12	CL22	C2	L3			F3	F2	F2
29	F2	F3	F3	F3	F5	L3	C2	C2	L2	L3	L2	L2	L3	L2	L2	L2	L2	L3	L3	F4	F4	F3	F2	
30	F2	F3	F3	F4	F6	L3	L4	C2	C2	L3	L3	L3	L2	CL22	L2	L3	L5	L3	L4	F3	F2	F4	F2	F3
31	F5	F4	F3	F4	F4	L5	L4	L2	L2	L2	L2	L2	L3	C2	C2	C2	C2	C1	C2	F3	F5	F5	F4	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 2016 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 50	X 51	X 48	X 52	X 40																X 66	X 58	X 51	X 50
2	X 48	48	46	X 45	X 42																X 69	X 67	X 68	X 65
3	X 65	X 65	X 60	X 59	X 58																A	X 49	X 52	X 50
4	X 46	A	O X 39	X 46	X 46																X 69	X 60	X 49	X 58
5	X 55	X 54	A	X 56	X 52																X 74	X 56	X 54	X 52
6	X 51	X 48	X 46	X 42	X 42																X 83	X 71	X 57	X 54
7	X 59	X 54	X 51	X 48	X 49	42															X 77	X 58	X 54	X 53
8	X 53	X 57	X 62	X 49	X 51																X 73	X 70	X 70	X 64
9	X 58	X 58	X 58	X 48	X 55																X 74	X 70	X 58	O X 55
10	X 55	X 58	X 56	X 47	X 49																X 72	X 66	X 68	X 74
11	X 60	X 64	X 58	X 52	X 44																X 72	X 64	X 53	X 50
12	X 55	O X 55	X 54	X 57	X 51																X 81	A	X 72	X 68
13	A	X 67	X 66	X 67	X 64																X 77	X 68	X 58	X 59
14	X 57	X 56	56	X 50	X 50																X 73	X 65	O X 65	X 63
15	X 66	X 63	X 64	X 64	X 62																X 58	X 63	X 60	X 56
16	X 52	X 51	X 52	X 54	X 50																X 80	X 75	X 78	X 79
17	X 82	X 83	X 82	X 72	X 60																X 63	X 62	X 64	X 63
18	X 62	X 62	X 60	X 50	X 50																X 85	X 64	X 64	66
19	X 68	X 65	X 64	X 56	X 52																X 83	X 54	X 51	X 48
20	X 50	X 51	X 49	X 50	X 46																X 93	X 60	X 50	X 50
21	A	X 48	X 48	X 46	X 47																X 70	X 65	X 61	X 55
22	X 54	X 56	X 56	X 49	X 45																X 90	X 63	X 49	X 52
23	X 53	X 52	X 50	X 50	X 52																X 79	X 65	X 58	X 59
24	X 60	X 62	X 64	X 67	X 60																X 59	X 57	X 58	X 53
25	X 57	X 56	X 54	X 49	X 45																X 80	X 73	X 68	X 66
26	64	X 64	X 62	X 63	X 54	X 47															X 68	X 69	X 61	X 58
27	X 58	X 59	X 54	X 53	X 56	X 47															A	X 57	X 55	X 49
28	X 46	X 44	X 46	X 40	X 34	X 39															X 76	X 70	X 60	X 53
29	X 53	X 46	X 34	X 34	X 35	X 35															X 62	X 52	X 51	X 50
30	X 46	X 49	X 55	A	X 33	X 35															X 66	X 54	X 50	X 50
31	X 48	X 47	X 47	X 43	X 40	A															X 83	X 54	X 45	X 42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	31	6															29	30	31	31
MED	X 55	X 56	X 54	X 50	X 50	X 40															X 74	X 64	X 58	X 55
U Q	X 60	X 62	X 60	X 56	X 54	X 47															X 80	X 68	X 64	X 63
L Q	X 50	X 51	X 48	X 47	X 44	X 35															X 68	X 57	X 51	X 50

JUL. 2016 fxI (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	44	45	42	46	34	34	A	53	67	61	55	54	E G 45	59	A	64	R 71	67	72	63	60	52	45	44
2	42	40	40	39	36	33	52	60	49	49	51	52	E G 44	53	52	54	59	58	59	58	63	61	62	59
3	59	59	54	53	52	48	54	50	57	54	51	R 55	A	54	50	56	56	59	R 46	59	A	43	46	44
4	40	A	33	40	40	34	44	53	57	53	50	58	A	60	65	59	56	64	57	67	63	54	R 43	52
5	49	48	A	R 50	46	Z 41	46	55	59	48	47	54	A	56	A	64	76	80	79	72	68	50	48	46
6	45	42	40	36	36	40	52	48	50	G	48	60	58	54	62	57	A	A	A	70	77	65	V 51	48
7	F 51	F 46	45	42	43	34	38	50	59	55	61	58	58	56	60	61	65	R 71	71	82	71	52	V 48	47
8	F 45	F 51	56	43	45	46	43	46	A	48	A	52	54	55	64	54	A	A	50	54	67	64	64	58
9	52	52	52	42	49	51	39	A	A	A	A	A	A	A	A	A	A	A	A	58	68	64	52	49
10	49	52	50	41	43	39	44	48	A	50	A	A	A	A	A	54	60	67	66	58	66	60	62	68
11	54	58	52	46	38	36	47	55	55	A	E G 46	A	A	A	70	64	64	68	76	78	66	58	47	44
12	49	49	48	51	45	44	50	53	50	52	56	58	66	66	74	78	65	72	75	80	75	A	R 66	F 61
13	A	61	60	61	58	58	57	V 54	55	66	57	R 60	60	A	A	69	60	R 63	68	73	71	62	V 52	53
14	51	50	47	44	44	43	44	54	73	55	G	53	58	68	66	68	67	61	64	75	67	59	R 59	57
15	60	57	58	58	56	49	46	47	47	53	A	49	A	53	A	68	74	64	53	46	52	57	54	50
16	46	V 45	46	V 48	44	39	54	52	53	53	A	59	A	55	59	68	74	72	68	72	74	69	72	73
17	76	77	76	66	54	46	53	77	62	54	R 59	59	59	62	64	78	86	83	79	74	57	56	58	57
18	56	56	V 54	44	V 44	43	49	59	A	A	A	A	A	A	A	A	A	A	79	87	79	58	58	56
19	62	59	58	50	46	43	45	56	63	60	60	58	56	56	56	59	67	79	84	86	77	48	45	42
20	44	45	43	44	40	32	42	58	58	64	62	68	A	66	77	75	86	92	93	91	87	54	44	44
21	A	42	42	40	41	41	45	65	73	78	69	A	61	60	A	58	59	65	66	66	64	59	55	49
22	48	50	50	43	39	38	42	56	66	57	60	56	52	54	61	64	64	71	79	87	84	57	43	46
23	47	46	44	44	46	40	37	51	R 62	53	48	A	55	A	A	A	73	74	74	69	73	59	52	53
24	54	56	58	61	54	A	43	47	46	50	49	A	R 52	57	A	57	59	A	54	A	53	R 51	V 52	47
25	V 51	50	48	43	Z 39	33	V 45	58	51	45	A	A	58	60	A	79	79	73	64	69	74	67	62	60
26	55	58	56	57	48	41	42	49	52	52	A	56	56	56	A	A	54	57	57	A	62	63	55	52
27	52	53	48	47	50	41	38	44	49	50	V 52	A	59	60	A	A	A	66	75	71	A	51	49	43
28	40	38	40	34	28	33	41	54	59	55	48	52	52	52	55	64	71	77	82	77	70	64	54	47
29	47	40	28	28	29	29	46	50	A	A	A	48	A	A	60	67	79	88	88	88	56	46	46	44
30	40	43	49	A	27	29	40	60	54	R 61	52	A	60	76	79	70	76	84	81	77	60	48	44	44
31	42	41	41	37	34	A	40	60	56	48	A	A	50	53	57	65	69	70	73	79	77	V 48	39	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	31	29	30	30	26	26	20	20	20	24	18	26	26	26	29	29	29	30	31	31
MED	49	50	48	44	44	40	44	54	56	53	52	56	57	56	62	64	67	70	72	72	68	58	52	49
U Q	54	56	54	50	48	44	49	58	62	57	60	58	59	60	66	68	74	77	79	80	74	62	58	57
L Q	44	45	42	41	38	34	42	50	51	50	48	52	52	54	57	58	60	64	62	64	62	51	46	44

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	400	416	432	440	A	452	R 452	A	420	432	A	364	L				
2							L	U L 384	L 412	428	R 440	R 436	444	440	432	A	A	388	L	A				
3							U L 328	L	L 416	424	440	456	A	A	A	440	A	A						
4							L	A	L 416	L 432	444	440	A	444	436	440	432	A	A	A				
5								L 376	408	416	L	A	A	A	A	A	A	388	A	L				
6							L	L	U L 432	428	A	R 436	448	R 460	440	440	A	A	A	A				
7								A	420	U R 456	452	A	464	A	U R 452	U R 444	432	412	L 380					
8							L	A	A	420	A	A	452	448	448	448	A	A	A	A				
9							A	A	A	A	A	A	A	A	A	A	A	A	A	U L 308				
10							L	A	A	A	A	A	A	A	A	452	424	A	A	A				
11							L	L 396	436	A	460	A	A	A	A	A	448	432	L 384	L				
12							216	L	L	L	U L 476	A	A	A	A	A	A	A	388	A				
13								L	432	A	476	A	484	A	A	A	R 432	A	A	A				
14								A	428	U L 464	476	464	468	476	464	460	448	424	L 408	L				
15								L	L	A	A	456	A	A	A	436	A	A	L	L				
16							U L 308	U L 388	U L 440	452	A	A	A	468	R 464	U R 440	448	A	L 380	L				
17							U L 360	L 400	L	L	468	A	A	472	464	456	444	L 428	L 376	L				
18							A	396	A	A	A	A	A	A	A	A	A	A	A	L				
19							L	L	U L 460	464	448	U R 468	R 464	U R 480	464	452	444	408	372	L				
20								A	440	448	R 472	460	A	A	U R 460	452	440	L 428	A	L				
21							L	L	U L 436	444	456	A	A	A	A	A	428	A	L 376					
22							L	L 384	L 432	L 440	440	456	468	R 452	R 448	440	R 428	396	368					
23							L	U L 376	408	L 436	432	A	A	A	A	A	A	A	L	L				
24						A	L	U L 376	L	416	436	A	A	A	A	A	A	A	L 380	A				
25							L	L	380	412	A	A	A	U R 452	A	A	A	396	368					
26								L	L 408	A	A	456	456	A	A	A	424	408	A	A				
27								L	A	L	436	A	A	A	A	A	A	A	A	A				
28							L	L	404	424	440	444	A	444	432	424	416	A	A					
29							L	348	A	A	A	452	A	A	R 432	424	U R 400	L 404	L 356	L				
30								U L 360	L 416	A	A	A	444	R 448	A	432	R 412	392	U L 348					
31								L	U L 404	L	A	A	R 448	440	436	432	416	392	348	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	12	21	18	18	12	12	14	14	18	18	14	15	1				
MED							U L 318	L 384	L 416	432	446	456	454	452	448	440	432	406	L 376	U L 308				
U Q							U L 344	396	U L 434	448	468	458	466	468	464	452	444	424	L 380					
L Q							262	L 376	408	424	440	442	448	444	436	432	424	392	364					

JUL. 2016 foF1 (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A 276	A 336	336	372	A	372	364	348	340	316	288	U A 236	A 172				
2						A	A	U A 264	A	328	332	352	U R 360	R 348	348	332	308	276	U A 216	A				
3						A	A 188	248	296	308	324	344	A	336	U A 328	344	316	316	U A 252	A				
4						B	U A 192	A 248	A 284	316	324	324	A	A	U R 360	340	312	280	A 232	A				
5						A	A	260	316	324	340	R 348	364	R 352	344	336	316	280	220	B				
6						B	A	244	A 292	A 320	A	A 336	A	A	A	360	324	U A 296	U A 240	B				
7						B	U A 228	U A 276	304	324	U A 344	U A 360	A 360	U A 356	A 336	U R 344	324	304	244	A				
8						B	B	A 264	300	332	A 352	U A 356	A	A	360	S 344	328	292	U A 224	B				
9						B	204	264	296	324	U A 340	R 356	A	A 352	A	A	A	A	A	U A 240				
10						A	216	A 256	U A 316	U A 356	A	A	A	A	356	U R 348	324	292	248	A				
11						A	A 204	A 268	R 300	316	R 340	A	A	A	A	A	A	A	A	A				
12						A	A	A	A	A	A	A	A	A	A	352	336	296	252	A				
13						A	A 196	A 260	U A 264	A	344	360	U A 352	A	A	A	A	A	A	A				
14						A	A 404	A 244	A	U A 352	A	A	A 408	A 344	R 352	R 352	320	288	U A 248	U A 200				
15						A	A 184	A 260	300	328	348	372	376	384	364	340	320	288	U A 236	A				
16						B	B	A	A 280	320	A	A	A	R 372	A	R	316	276	A 236	B				
17						B	204	U A 272	A	U A 292	A	A	A	A	A	A	A 320	296	U A 224	B				
18						B	B	U A 268	A	A	A	A	A	A	A	A	336	292	236	A				
19						188	A	A	332	U A 324	U A 348	A 360	A	A	360	A 352	332	284	A	A				
20						A	U A 284	A 244	280	A 296	U A 312	A	A	A	A	A	A	A	R 232	A				
21						B	U A 184	256	U A 316	R 332	A 356	A	U R 368	A	A	336	320	A	A	A				
22						A	192	244	A 308	A	A	A	380	368	A	A	A	A	A	A				
23						B	B	260	U A 292	A	A	A	A	A	A	A	A	A	A	A 248				
24						A	U A 180	U A 256	280	316	344	352	364	356	356	336	316	276	A 232	A				
25						B	180	248	304	A 312	A 328	U A 340	A	U A 376	U A 388	A	A	A	A	A				
26							A	A	280	312	340	R 348	R 356	360	A	A	312	272	232	A				
27							A	A 256	292	316	328	R 344	A	360	R 344	A	A	A	A	A				
28							A	244	288	304	R 336	R 348	356	348	316	320	300	264	A 204	A				
29							A	244	280	316	328	A	A	A	A	A	A	A	228	A				
30							A	U A 228	284	A	A	R 348	R 348	R 352	R 352	340	308	A	A	A				
31							A	A	A	A	A	A	360	352	348	328	308	268	A 212	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	15	26	25	24	20	17	14	17	17	18	22	20	21	4				
MED						188	A 196	A 256	296	320	340	348	362	356	352	340	318	288	A 232	A 220				
U Q							A 216	U A 264	A 306	328	A 346	A 358	372	366	360	348	324	294	242	A 244				
L Q							A 184	244	282	314	328	344	356	350	344	336	312	276	A 224	A 186				

JUL. 2016 foE (0.01MHz)

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 34	J A 19	J A 28	J A 42	J A 28	J A 86	J A 59	J A 32	J A 53	J A 52	42	J A 55	41	40	J A 64	42	J A 59	J A 54	J A 35	19	J A 18	J A 25	J A 23	J A 31
2	J A 66	J A 66	J A 39	J A 72	J A 51	J A 94	J A 51	J A 46	J A 63	36	40	41	41	J A 52	38	J A 45	J A 48	J A 45	29	J A 42	J A 36	J A 24	J A 18	J A 53
3	J A 48	J A 30	J A 30	J A 64	J A 51	J A 81	23	J A 37	J A 38	J A 62	J A 84	J A 83	J A 79	J A 61	J A 51	49	J A 50	J A 74	J A 72	J A 96	J A 87	J A 83	J A 42	J A 42
4	J A 66	J A 108	J A 78	J A 28	J A 25	20	J A 26	J A 46	34	J A 47	J A 43	35	J A 81	43	43	38	42	J A 58	J A 47	41	J A 87	J A 108	J A 74	J A 122
5	J A 78	J A 78	J A 104	J A 106	J A 85	J A 51	J A 38	30	35	J A 53	41	J A 60	J A 58	J A 56	J A 68	J A 73	J A 77	J A 59	J A 63	20	J A 53	J A 52	J A 33	J A 43
6	J A 42	J A 32	J A 24	J A 33	J A 28	19	J A 28	J A 49	J A 48	J A 129	J A 118	40	J A 58	J A 44	J A 45	46	J A 152	J A 153	J A 129	J A 67	J A 32	J A 48	J A 39	J A 50
7	J A 42	J A 50	J A 59	J A 54	J A 61	18	J A 29	J A 48	J A 44	J A 73	J A 56	J A 85	J A 64	J A 52	J A 58	38	33	36	J A 77	J A 37	J A 84	J A 16	J A 50	J A 74
8	J A 31	J A 62	J A 19	J A 51	J A 30	J A 28	J A 27	J A 44	J A 49	J A 54	J A 57	J A 72	J A 51	J A 104	45	39	J A 78	J A 98	J A 189	J A 122	J A 110	J A 38	J A 39	J A 38
9	J A 40	J A 24	J A 28	J A 33	J A 20	J A 20	J A 33	J A 42	J A 53	J A 60	J A 100	J A 93	J A 259	J A 86	J A 74	J A 61	J A 122	J A 106	J A 78	28	J A 27	J A 30	J A 23	J A 27
10	J A 43	J A 40	J A 46	J A 85	J A 60	J A 32	28	J A 50	J A 64	J A 74	J A 58	J A 142	J A 74	J A 83	J A 52	38	42	J A 65	J A 38	J A 52	J A 21	J A 39	J A 32	J A 28
11	J A 53	J A 39	J A 32	J A 23	J A 18	J A 18	28	34	J A 45	J A 104	J A 68	J A 111	J A 126	J A 150	J A 96	J A 69	J A 72	J A 51	J A 41	J A 54	J A 50	J A 53	J A 35	J A 51
12	J A 108	J A 65	J A 63	J A 44	J A 31	J A 26	J A 36	J A 45	41	J A 44	J A 62	J A 54	J A 64	J A 53	49	48	49	J A 66	J A 40	J A 52	J A 72	J A 151	J A 95	J A 78
13	J A 85	J A 65	J A 39	J A 31	J A 28	J A 32	27	J A 40	J A 49	J A 60	J A 64	J A 156	J A 54	J A 84	J A 87	J A 98	J A 76	J A 60	J A 82	J A 102	J A 46	J A 31	J A 26	J A 51
14	J A 44	J A 30	J A 46	J A 62	J A 49	J A 51	J A 38	J A 50	J A 63	J A 45	J A 57	J A 48	J A 44	39	39	40	36	34	J A 46	J A 33	J A 46	J A 18	J A 86	J A 48
15	J A 51	J A 27	J A 24	J A 21	J A 16	J A 23	25	J A 40	36	J A 48	J A 66	46	J A 51	46	J A 67	J A 120	J A 77	J A 50	J A 41	J A 38	J A 77	J A 22	18	J A 30
16	J A 22	J A 24	J A 22	19	J A 20	J A 26	J A 40	J A 51	J A 32	J A 48	J A 117	J A 74	J A 164	41	J A 46	40	G	J A 101	29	J A 42	J A 63	J A 51	J A 82	J A 43
17	J A 73	J A 63	J A 32	J A 24	20	J A 21	32	J A 34	J A 43	38	J A 44	J A 51	J A 52	J A 47	J A 49	40	34	J A 35	24	20	J A 42	J A 51	J A 62	J A 39
18	J A 21	J A 20	Z 29	J A 21	20	J A 29	J A 36	J A 41	J A 111	J A 144	J A 155	99	J A 114	J A 118	J A 122	J A 74	J A 86	J A 109	J A 73	J A 33	J A 33	77	J A 51	J A 53
19	J A 30	J A 49	J A 27	J A 18	J A 24	J A 24	J A 23	J A 52	J A 33	J A 39	J A 44	42	J A 43	J A 43	J A 43	40	41	J A 42	J A 37	J A 66	J A 54	J A 42	J A 72	J A 43
20	J A 39	J A 40	J A 39	J A 34	J A 27	J A 52	J A 32	J A 60	J A 43	J A 52	J A 40	J A 51	J A 100	J A 62	J A 47	J A 41	J A 34	J A 30	J A 73	J A 28	J A 22	J A 18	J A 20	J A 51
21	J A 62	J A 46	J A 39	J A 26	J A 30	J A 29	25	J A 37	J A 43	J A 46	J A 49	J A 77	J A 56	J A 71	J A 114	J A 51	G	J A 97	J A 53	J A 45	J A 50	J A 30	J A 31	J A 40
22	J A 17	J A 22	E 16	B E 16	B J A 21	J A 26	28	35	35	J A 43	J A 59	42	41	38	31	J A 41	J A 38	J A 33	J A 52	J A 53	J A 28	J A 21	21	J A 26
23	J A 26	J A 20	J A 22	J A 33	J A 23	J A 20	J A 29	J A 38	J A 143	J A 83	J A 64	J A 81	J A 132	J A 166	J A 96	J A 66	J A 49	J A 54	J A 53	J A 46	J A 21	J A 20	J A 24	J A 28
24	J A 46	J A 46	J A 52	J A 39	J A 31	J A 63	24	32	32	38	45	J A 53	47	J A 52	J A 71	J A 60	J A 54	J A 84	24	J A 86	J A 103	J A 70	J A 29	J A 22
25	J A 27	J A 24	J A 19	21	J A 20	J A 24	20	33	J A 44	J A 50	J A 59	J A 74	J A 70	40	J A 79	J A 61	J A 64	J A 40	J A 32	J A 34	J A 35	J A 46	J A 51	J A 53
26	J A 30	J A 41	J A 28	J A 28	J A 43	J A 32	J A 38	J A 42	31	J A 49	J A 56	J A 43	J A 43	46	J A 80	J A 82	36	34	J A 49	J A 72	J A 49	J A 51	J A 50	J A 51
27	J A 70	J A 39	J A 35	J A 25	J A 32	J A 27	J A 28	35	J A 61	J A 44	J A 51	J A 65	J A 56	J A 58	J A 64	J A 83	J A 71	J A 50	J A 72	J A 50	J A 76	J A 76	J A 79	J A 34
28	J A 30	J A 52	21	J A 45	J A 51	J A 23	J A 32	27	32	39	38	41	47	40	G	38	34	J A 41	J A 57	J A 30	J A 31	J A 41	J A 46	J A 27
29	20	E 16	B E 16	B 19	J A 20	A E 16	B J A 25	29	J A 54	J A 52	J A 46	J A 263	J A 103	J A 52	38	J A 37	35	J A 30	25	J A 27	J A 19	17	19	J A 19
30	22	J A 26	J A 39	J A 37	J A 43	J A 39	J A 27	J A 33	35	J A 62	J A 53	J A 64	38	40	J A 73	37	G 29	J A 34	J A 33	J A 32	J A 52	J A 22	J A 25	J A 46
31	J A 51	J A 37	J A 44	J A 34	J A 46	J A 49	J A 62	J A 52	J A 52	J A 54	J A 68	J A 54	40	44	40	38	37	J A 39	J A 36	J A 23	J A 41	J A 51	J A 30	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 42	J A 39	J A 32	J A 33	J A 28	J A 27	J A 28	J A 40	J A 44	J A 52	J A 57	J A 60	J A 56	J A 52	J A 52	J A 45	J A 48	J A 51	J A 47	J A 42	J A 46	J A 41	J A 35	J A 43
U Q	J A 62	J A 52	J A 44	J A 45	J A 46	J A 49	J A 36	J A 48	J A 53	J A 62	J A 66	J A 83	J A 81	J A 71	J A 74	J A 66	J A 72	J A 74	J A 72	J A 54	J A 72	J A 52	J A 51	J A 51
L Q	J A 30	J A 24	J A 24	23	J A 20	21	26	34	35	44	44	46	44	43	43	39	35	J A 36	35	30	J A 31	J A 22	J A 24	J A 28

JUL. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	E B 16	19	20	E B 16	20	A A 59	G 27	40	42	41	45	40	40	A A 64	38	43	47	29	19	17	20	E B 16	E B 16
2	E B 16	E B 16	E B 16	34	20	24	29	30	33	34	39	40	40	43	37	43	42	36	26	40	31	17	17	35
3	E B 16	16	17	32	17	23	22	35	36	34	44	46	A A 79	50	47	44	48	44	38	45	A A 87	31	36	24
4	37	A A 108	23	19	E B 16	E B 16	22	37	32	38	41	U Y 35	A A 81	40	41	37	40	48	42	40	45	18	30	19
5	E B 16	16	A A 104	34	20	21	23	29	33	38	40	50	A A 58	53	A A 68	66	62	37	47	19	43	46	26	20
6	E B 16	16	17	23	22	E B 16	24	34	34	40	46	40	45	43	42	44	A A 152	A A 153	A A 129	41	20	35	E B 16	E B 16
7	28	21	32	20	38	E B 16	24	38	34	42	42	50	44	50	41	U Y 38	U Y 33	36	33	31	40	E B 16	E B 16	24
8	18	20	E B 16	21	E B 16	E B 16	24	36	A A 49	42	A A 57	52	45	38	41	38	A A 78	A A 98	41	42	24	16	20	20
9	23	19	19	18	E B 16	E B 16	32	A A 42	A A 53	A A 60	A A 100	A A 93	A A 259	A A 86	A A 74	A A 61	A A 122	A A 106	A A 78	26	24	27	20	26
10	23	35	E B 16	30	E B 16	E B 16	27	39	A A 64	46	A A 58	A A 142	A A 74	A A 83	A A 52	38	42	57	38	48	19	23	18	17
11	18	28	21	E B 16	E B 16	E B 16	23	32	38	A A 104	39	A A 111	A A 126	A A 150	49	50	43	30	25	40	37	52	18	21
12	E B 16	31	18	18	E B 16	E B 16	18	35	36	39	45	50	50	46	47	48	46	56	32	36	47	A A 151	52	42
13	A A 85	46	28	26	20	19	26	34	38	44	44	50	46	A A 84	A A 87	52	39	44	56	45	31	23	19	30
14	23	22	22	27	22	21	G 31	41	38	38	43	43	43	38	38	37	34	31	31	27	32	E B 16	44	36
15	30	E B 16	E B 16	E B 16	E B 16	E B 16	24	37	35	42	A A 66	41	A A 51	U Y 45	A A 67	38	68	45	28	23	46	16	E B 16	25
16	E B 16	20	E B 16	E B 16	E B 16	E B 16	21	29	31	43	A A 117	56	A A 164	40	43	36	G 52	28	22	40	39	35	30	
17	28	17	16	E B 16	E B 16	E B 16	30	31	37	36	43	50	50	45	44	38	34	G 30	U Y 24	18	19	32	44	20
18	16	E B 16	16	18	E B 16	E B 16	30	36	A A 111	A A 144	A A 155	A A 99	A A 114	A A 118	A A 122	A A 74	A A 86	A A 109	58	20	17	30	32	34
19	21	21	E B 16	E B 16	16	E B 16	20	27	G 30	33	38	42	39	43	40	G 35	38	37	24	22	50	20	36	28
20	E B 16	E B 16	19	18	21	20	G 24	46	40	43	37	40	A A 100	60	43	38	33	30	40	20	19	E B 16	E B 16	20
21	A A 62	18	24	17	23	E B 16	21	31	36	39	40	A A 77	55	56	A A 114	49	G 54	31	27	31	20	24	30	
22	E B 16	18	E B 16	E B 16	E B 16	18	26	33	34	39	44	40	40	38	U Y 31	36	37	30	32	36	22	17	20	17
23	18	E B 16	E B 16	19	E B 16	E B 16	24	31	36	40	38	A A 81	49	A A 166	A A 96	A A 66	47	52	30	G 23	18	E B 16	17	E B 16
24	37	22	39	21	E B 16	A A 63	21	30	31	38	38	A A 53	46	50	A A 71	56	52	A A 84	24	A A 86	20	E B 16	18	E B 16
25	19	19	E B 16	E B 16	E B 16	E B 16	20	29	34	38	A A 59	A A 74	54	40	A A 79	56	56	34	32	34	27	37	39	29
26	E B 16	24	E B 16	19	20	23	29	30	30	47	A A 56	38	41	46	A A 80	A A 82	35	34	41	A A 72	40	22	E B 16	42
27	28	E B 16	20	19	E B 16	20	20	30	44	41	36	A A 65	48	49	A A 64	A A 83	A A 71	47	48	45	A A 76	47	42	23
28	22	18	E B 16	21	24	E B 16	20	26	31	38	37	40	46	39	G	37	33	40	53	27	24	24	17	E B 16
29	16	E B 16	E B 16	E B 16	E B 16	E B 16	18	28	A A 54	A A 52	A A 46	39	A A 103	A A 52	37	35	34	29	G 22	20	E B 16	E B 16	E B 16	E B 16
30	16	E B 16	E B 16	A A 37	16	E B 16	21	27	31	50	47	A A 64	38	39	47	36	G 28	30	26	24	31	E B 16	E B 16	22
31	31	E B 16	18	18	E B 16	A A 49	24	33	34	40	A A 68	A A 54	40	44	36	38	37	36	32	20	22	36	19	E B 16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	18	17	19	E B 16	E B 16	24	32	36	40	44	50	49	46	47	38	42	44	32	27	31	22	19	22
U Q	28	22	21	23	20	20	27	36	A A 40	44	A A 57	A A 65	A A 79	A A 56	A A 71	A A 56	A A 56	A A 54	42	41	40	35	35	30
L Q	E B 16	E B 16	E B 16	E B 16	E B 16	E B 16	21	29	33	38	39	40	43	40	41	37	34	34	28	22	20	E B 16	E B 16	E B 17

JUL. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	16	16	16	16	16	16	16	16	16	20	22	22	19	18	16	16	16	13	15	16	16	16
2	16	16	16	16	16	16	16	14	16	19	19	19	20	24	18	17	16	16	16	16	16	16	16	16
3	16	16	16	16	16	16	16	16	16	16	19	19	21	19	23	23	20	16	16	16	16	16	16	16
4	16	16	16	16	16	16	16	16	16	17	20	16	21	18	17	20	16	16	16	14	15	16	16	16
5	16	16	16	16	16	16	14	16	16	17	19	20	22	22	22	20	16	16	16	16	16	16	16	16
6	16	16	16	16	16	16	16	16	16	16	18	21	18	19	21	20	18	16	16	16	16	16	16	16
7	16	16	16	16	16	16	16	16	16	19	19	20	24	16	18	18	18	19	16	14	16	16	16	16
8	16	16	16	16	16	16	16	16	16	19	22	20	23	24	19	19	19	17	16	14	16	16	16	16
9	16	16	16	16	16	16	16	16	16	17	19	20	19	28	20	20	22	16	16	13	16	16	16	16
10	16	16	16	16	16	16	16	16	20	23	31	21	21	22	19	20	20	16	16	14	16	16	16	16
11	16	16	16	16	16	16	16	16	16	17	20	21	20	19	22	19	18	16	14	14	16	16	16	16
12	16	16	16	16	16	16	14	16	16	16	20	22	18	17	17	19	17	17	16	16	16	16	16	16
13	16	16	16	16	16	16	16	16	16	16	16	22	20	21	20	19	16	16	16	16	16	16	16	16
14	16	16	16	16	16	16	16	16	16	16	20	21	20	20	21	22	17	16	16	16	16	16	16	16
15	16	16	16	16	16	16	16	16	16	16	20	21	31	21	22	20	19	16	16	14	16	16	16	16
16	16	16	15	16	16	16	15	16	16	16	21	22	26	21	20	19	19	16	16	16	16	16	16	16
17	16	16	16	16	16	16	16	16	16	18	20	21	28	24	20	16	19	16	16	16	16	16	16	16
18	16	16	16	16	16	16	16	16	17	17	24	20	26	24	24	22	19	16	16	13	16	16	16	16
19	16	16	16	16	16	16	16	16	16	18	18	17	18	24	26	20	16	16	16	14	16	16	16	16
20	16	16	16	16	16	16	16	16	16	18	19	20	25	24	23	20	18	16	16	14	16	16	16	16
21	16	16	16	16	16	16	16	16	19	22	22	38	26	25	23	20	16	16	16	16	16	16	16	16
22	16	16	16	16	16	16	16	16	16	17	19	21	22	21	23	19	21	16	16	16	16	16	16	16
23	16	16	16	16	16	16	16	16	16	16	22	41	24	22	20	30	20	16	16	16	16	16	16	16
24	16	16	16	16	16	16	16	16	16	16	18	18	19	27	26	21	20	16	16	16	16	16	16	16
25	16	16	16	16	16	16	16	16	16	16	16	22	24	20	20	20	16	16	16	16	16	16	16	16
26	16	16	16	16	16	16	15	16	16	17	18	20	20	20	20	20	16	16	16	16	16	16	16	16
27	16	16	16	16	16	16	16	16	16	16	16	18	20	18	16	16	16	16	16	16	16	16	16	16
28	16	16	16	16	16	16	14	16	16	16	16	20	20	20	20	18	16	16	16	16	16	16	16	16
29	16	16	16	16	16	16	16	16	16	16	16	16	25	20	19	16	16	16	16	16	16	16	16	16
30	16	16	16	16	16	16	16	16	16	16	16	19	20	21	21	20	16	16	16	16	16	16	16	16
31	16	16	16	16	16	16	16	16	16	16	16	19	28	20	23	16	16	16	12	16	16	16	16	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	16	16	16	16	19	20	21	21	20	20	17	16	16	16	16	16	16	16
U Q	16	16	16	16	16	16	16	16	16	18	20	21	25	24	23	20	19	16	16	16	16	16	16	16
L Q	16	16	16	16	16	16	16	16	16	16	16	19	20	20	19	18	16	16	16	14	16	16	16	16

JUL. 2016 fmin (0.1MHz)

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	288	330	F 298	F 344	334	334	A	326	352	360	339	331	G	316	A	310	R 317	316	341	324	353	325	310	F 290
2	F 319	F 310	F 306	302	327	314	350	386	352	337	308	296	G	312	306	268	329	314	331	301	318	314	320	307
3	301	317	306	332	339	351	363	323	364	328	297	R 309	A	318	264	328	332	326	R 309	342	A	320	F 294	F 298
4	309	A	336	300	307	342	354	360	347	342	264	319	A	305	323	309	307	328	302	313	362	322	R 301	308
5	315	F 315	A	R 364	F 336	F 316	360	362	397	369	309	312	A	294	A	278	302	314	340	335	344	313	306	301
6	307	337	314	305	313	366	382	371	341	G	305	313	311	264	325	303	A	A	A	320	335	337	V 322	F 297
7	F 339	F 330	F 301	333	350	F 349	374	336	346	301	343	315	306	293	287	294	281	R 302	291	336	367	302	F 270	304
8	F 278	F 298	F 340	F 311	F 303	317	326	316	A	294	A	E A 252	281	261	316	S 323	A	A	287	297	310	291	298	297
9	288	F 279	317	F 308	312	338	362	A	A	A	A	A	A	A	A	A	A	A	A	293	312	324	303	299
10	F 276	F 279	336	308	321	F 308	327	334	A	291	A	A	A	A	A	274	300	321	332	296	306	298	284	324
11	F 291	F 305	F 302	F 303	307	318	380	339	355	A	G	A	A	A	310	294	300	295	307	337	329	316	291	F 281
12	305	300	F 314	F 321	F 321	F 346	362	369	339	306	315	296	313	289	296	311	275	291	301	317	308	A	R 301	F 301
13	A	301	F 289	F 312	308	F 350	338	V 333	312	334	309	R 291	282	A	A	296	326	R 304	318	325	330	314	V 295	281
14	284	F 284	F 306	F 314	F 307	F 325	330	343	376	324	G	249	287	305	298	298	309	302	304	311	309	315	R 302	F 296
15	291	F 308	F 292	303	310	F 342	335	328	300	335	A	277	A	252	A	311	341	351	352	314	299	296	302	326
16	290	295	304	V 319	310	326	375	374	335	279	A	288	A	275	273	305	311	326	326	317	303	299	298	286
17	F 283	296	312	318	315	305	F 311	338	367	H 309	327	310	301	304	272	297	310	328	315	316	308	284	289	F 295
18	301	296	V 323	323	V 309	324	325	344	A	A	A	A	A	A	A	A	A	A	313	334	342	295	F 292	F 306
19	F 302	308	F 335	333	341	330	326	343	355	324	337	301	301	279	274	285	294	304	325	333	346	339	263	F 301
20	F 290	F 311	F 294	F 303	347	343	346	348	334	347	309	331	A	250	276	258	275	308	325	332	360	316	292	284
21	A	273	321	F 288	298	323	297	328	341	354	341	A	310	329	A	283	300	308	325	327	307	303	325	307
22	298	304	330	309	281	322	319	334	355	315	347	327	279	296	306	306	288	296	294	317	344	334	294	F 287
23	297	306	F 311	290	F 315	323	296	320	R 361	376	354	A	307	A	A	A	307	303	288	303	341	310	305	F 280
24	F 306	F 300	F 307	F 333	F 314	A	354	350	330	345	306	A	R 282	322	A	305	318	A	335	A	309	R 315	V 311	286
25	V 289	322	314	303	Z 297	303	V 365	391	432	373	A	A	291	296	A	315	319	318	299	305	327	298	308	303
26	F 279	324	307	340	F 345	314	340	329	343	314	A	313	340	324	A	A	325	322	334	A	308	314	313	297
27	F 300	309	305	304	F 335	379	374	344	331	320	V 332	A	327	341	A	A	A	320	324	326	A	320	323	323
28	322	310	326	312	277	330	360	357	366	363	320	251	303	308	295	303	291	306	327	332	331	323	325	316
29	327	313	322	311	299	F 268	365	374	A	A	A	258	A	A	283	269	276	303	337	359	338	302	F 289	292
30	292	F 309	381	A	F 295	F 311	330	365	336	R 364	347	A	292	308	322	297	300	321	338	351	351	339	F 303	F 304
31	F 293	F 296	F 323	336	322	A	333	378	398	352	A	A	282	284	297	306	309	316	307	349	360	336	312	315
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	31	29	30	30	26	27	21	20	20	24	18	26	26	26	29	29	29	30	31	31
MED	297	307	313	312	313	325	348	344	350	334	315	305	296	300	296	300	307	314	324	324	330	314	302	299
U Q	306	313	323	332	334	342	363	365	364	354	340	314	308	314	310	309	318	321	333	334	345	323	311	307
L Q	288	296	F 305	303	307	315	327	333	336	309	306	282	282	282	276	285	294	303	303	312	308	302	292	290

JUL. 2016 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	353	A	A		A	403	R 413	A	414	A	A	372	L				
2							L	U L 405	L 399	411	R 435	R 407	400	A	439	A	A	350	L	A				
3							U L 398	L	L 393	402	A	A	A	A	A	A	A	A						
4							L	A	L 408	L 398	433	435	A	414	400	H 384	347	A	A	A				
5								L 378	409	447	L	A	A	A	A	A	A	372	A	L				
6							L	L	U L 365	369	A	R 440	A	R 307	406	A	A	A	A	A				
7								A	399	U R 329	355	A	325	A	U R 396	U R 399	379	359	L 349					
8							L	A	A	A	A	A	A	403	387	376	A	A	A	A				
9							A	A	A	A	A	A	A	A	A	A	A	A	A	U L 334				
10							L	A	A	A	A	A	A	A	A	385	A	A	A	A				
11							L	L 376	399	A	434	A	A	A	A	A	318	362	L 369	L				
12							471	L	L	L	A 336	A	A	A	A	A	A	A	348	A				
13								L	367	A	390	A	A 349	A	A	A	R 371	A	A	A				
14								A	393	U L 421	385	401	431	421	386	381	378	376	L 340	L				
15								L	L	A	A	441	A	A	A	394	A	A	L	L				
16							U L 379	U L 411	U L 385	408	A	A	A	408	R 389	U R 395	374	A	L 367	L				
17							U L 352	L 376	L	L	369	A	A	357	347	368	374	H 379	L 372	L				
18							A	384	A	A	A	A	A	A	A	A	A	A	A	L				
19							L	L	U L 377	413	455	U R 386	R 427	U R 404	411	417	360	336	363	L				
20								A	383	A 346	R 404	414	A	A	U R 387	389	367	L 354	A	L				
21							L	L	U L 375	381	396	A	A	A	A	A	400	A	L 363					
22							L	L 392	L 378	L 428	A	436	369	R 409	R 418	394	R 371	366	358					
23							L	U L 372	391	L 393	450	A	A	A	A	A	A	A	L	L				
24						A	L	U L 382	L	442	422	A	A	A	A	A	A	A	L 375	A				
25							L	L	414	431	A	A	A	U R 402	A	A	A	385	386					
26								L	L 399	A	A	383	368	A	A	A	365	357	A	A				
27								L	A	L	423	A	A	A	A	A	A	A	A	A				
28							L	L	391	377	397	417	A	418	429	411	397	A	A					
29							L	389	A	A	A	382	A	A	R 418	399	U R 412	L 355	L 357	L				
30								U L 384	L 396	A	A	A	426	R 385	A	382	R 388	367	U L 390					
31								L	U L 403	L	A	A	R 417	A	416	391	392	371	349	L				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	12	20	16	15	11	10	12	14	16	16	14	15	1				
MED							U L 388	L 383	L 393	405	404	414	402	406	403	392	374	364	L 363	U L 334				
U Q							434	L 390	L 399	424	434	436	426	414	418	399	390	372	L 372					
L Q							U L 366	L 376	L 380	379	385	386	368	R 394	387	383	366	355	349					

JUL. 2016 M(3000)F1 (0.01)

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JUL. 2016 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	304		266	316	332	G	338	A	324	304	286	254	250				
2							260	222	276	324	382	392	G	354	370	402	300	314	262	288				
3							248	304	248	320	382	368	A	352	A 494	310	310	298						
4							252	248	292	288	478	334	A	356	314	340	338	298	308	268				
5								256	224	246	372	364	A	412	A	450	326	282	244	240				
6							204	238	296	318	390	330	348	486	310	352	A	A	A	270				
7								296	278	376	288	342	360	382	386	368	376	314	318					
8							268	334	A	402	A	E A 552	428	468	330	334	A	A	376	334				
9							240	A	A	A	A	A	A	A	A	A	A	A	A	316				
10							280	266	A	402	A	A	A	A	A	444	350	304	264	336				
11							218	280	272	A	G	A	A	A	332	362	352	338	272	246				
12							214	222	300	346	344	380	336	370	324	310	384	334	294	250				
13								298	354	292	348	382	396	A	A	352	308	338	304	258				
14								272	236	328	G	530	402	342	340	346	324	346	324	262				
15								314	376	320	A	468	A	518	A	332	304	268	254	282				
16							236	232	306	432	A	424	A	438	430	344	304	288	278	256				
17							298	254	244	H 328	318	366	370	364	406	322	286	262	254	234				
18							256	258	A	A	A	A	A	A	A	A	A	A	292	238				
19							250	274	272	298	298	368	372	448	432	396	334	304	258	250				
20								266	290	268	348	294	A	506	338	408	362	306	280	240				
21							342	280	262	256	276	A	350	324	A	384	348	328	280					
22							328	286	252	272	286	326	444	396	348	334	360	318	304					
23							370	316	238	254	288	A	368	A	A	A	312	302	292	248				
24						A	238	282	318	298	378	A	432	332	A	400	326	A	272	A				
25							224	198	196	262	A	A	414	366	A	298	296	286	306					
26								306	294	344	A	346	310	332	A	A	310	316	280	A				
27								264	322	332	322	A	322	300	A	A	A	296	266	254				
28							236	256	256	266	346	518	390	376	376	336	336	310	262					
29							238	248	A	A	A	520	A	A	386	392	352	296	246	218				
30								240	288	262	294	A	380	304	286	322	312	272	246					
31								230	224	300	A	A	440	414	364	330	316	292	282	224				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							20	30	25	27	21	20	20	24	18	26	26	26	28	22				
MED							249	266	276	300	346	368	385	368	356	345	325	303	279	252				
U Q							274	296	298	332	382	446	430	426	386	392	350	316	299	270				
L Q							236	248	246	266	296	338	355	340	330	330	308	288	260	240				

JUL. 2016 h'F2 (KM)

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JUL. 2016 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	282	230	294	248	244	250	A	H 222	A	A	232	A	216	204	A	218	A	A	230	224	212	240	228	292
2	232	288	260	360	262	322	246	218	194	188	194	222	218	A	174	A	A	298	H 202	A	256	254	234	306
3	252	252	266	260	234	222	206	236	210	202	A	A	A	A	A	A	A	A	326	274	A	270	344	304
4	356	A	268	268	248	228	222	A	192	208	198	H 162	A	208	232	H 204	302	A	A	A	226	226	298	256
5	272	260	A	254	218	244	218	210	200	180	206	A	A	A	A	A	A	274	A	224	230	318	278	268
6	262	242	250	302	282	220	200	196	232	270	A	192	A	E A 376	240	A	A	A	A	A	210	228	242	316
7	244	262	322	278	278	214	214	A	204	E A 328	A 286	A	E A 354	A	222	214	206	252	278	236	210	248	300	284
8	350	290	222	272	272	260	232	A	A	A	A	A	A	212	244	232	A	A	A	A	272	262	258	266
9	298	312	260	282	248	208	A	A	A	A	A	A	A	A	A	A	A	A	A	286	246	236	234	292
10	338	334	224	326	240	266	242	A	A	A	A	A	A	A	A	210	A	A	A	A	236	262	284	240
11	276	284	248	252	268	264	208	216	216	A	188	A	A	A	A	A	E A 358	212	218	240	252	342	278	330
12	274	292	256	226	236	224	158	214	218	204	A 324	A	A	A	A	A	A	A	254	A	268	A	352	322
13	A	324	300	276	222	212	220	228	248	A	238	A	E A 304	A	A	A	246	A	A	A	234	222	274	318
14	318	302	282	278	262	236	280	A	220	172	240	228	202	176	196	220	202	214	242	258	246	224	358	342
15	324	268	274	272	246	202	204	270	212	A	A	190	A	A	A	224	A	A	212	254	356	264	246	256
16	282	288	270	252	252	244	224	196	H 182	236	A	A	A	200	244	208	212	A	212	240	258	280	290	302
17	302	270	236	226	242	282	242	198	244	H 188	262	A	A	298	308	H 256	H 214	H 186	210	208	204	320	350	272
18	270	256	244	244	264	240	A	242	A	A	A	A	A	A	A	A	A	A	A	226	210	286	322	328
19	264	274	236	228	228	230	212	184	184	H 168	164	232	196	214	206	172	H 250	E A 302	218	244	232	196	390	338
20	286	282	296	260	218	228	236	A	230	A	186	198	A	A	250	208	214	216	A	238	206	184	244	332
21	A	328	292	298	282	234	230	228	226	230	218	A	A	A	A	A	202	A	262	262	262	248	242	286
22	272	268	236	238	272	254	242	218	202	190	A	172	246	202	192	210	246	220	254	254	210	214	278	304
23	300	242	260	304	264	252	252	226	232	232	180	A	A	A	A	A	A	A	250	244	218	226	234	294
24	298	282	308	250	254	A	210	216	190	190	190	A	A	A	A	A	A	A	214	A	234	254	264	284
25	302	254	260	260	298	284	198	E A 210	E A 216	190	A	A	A	212	A	A	A	228	230	264	244	294	294	276
26	310	256	262	236	230	276	250	220	H 176	A	A	224	252	A	A	A	226	236	A	A	284	254	240	338
27	318	258	276	266	228	198	214	198	A	A 308	194	A	A	A	A	A	A	A	A	A	A	342	314	264
28	262	272	232	308	434	242	210	H 188	186	244	218	206	A	206	194	210	198	A	A	224	228	242	238	248
29	244	224	250	282	300	298	226	224	A	A	A	242	A	A	184	202	206	214	216	A	214	248	268	286
30	286	256	204	A	308	274	228	222	194	A	A	A	188	226	A	220	H 194	216	222	222	226	222	268	296
31	346	270	254	234	252	A	230	228	220	208	A	A	198	A	198	224	240	266	E A 292	228	206	240	238	256
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	31	29	28	24	24	19	17	11	10	12	14	16	16	14	19	20	29	30	31	31
MED	286	270	260	263	252	242	223	218	209	203	206	206	208	208	214	212	214	221	226	240	232	248	274	292
U Q	314	288	276	282	272	265	239	227	223	236	239	228	E A 252	220	244	222	246	266	254	256	254	270	300	318
L Q	267	256	244	248	236	223	210	204	193	188	189	190	198	203	194	208	204	214	214	225	211	226	242	268

JUL. 2016 h'F (KM)

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JUL. 2016 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	100	100		118	A	A	A	100	100	98	98	110	A				
2						A	A	112	A	96	98	98	98	98	98	98	112	A	100	A				
3						A	E B 122	100	96	96	98	96	A	96	100	100	A	E A	100	A				
4						B	116	96	96	96	98	98	A	A	116	A	96	96	96	A				
5						A	A	116	A	96	96	96	98	98	98	98	100	100	96	B				
6						B	A	98	98	96	A	98	A	A	A	A	112	114	100	B				
7						B	120	98	116	96	96	104	100	94	94	96	98	106	102	A				
8						B	B	102	96	96	100	96	A	A	96	98	98	98	98	B				
9						B	116	100	108	116	98	98	98	102	A	A	A	A	A	A				
10						A	118	98	S 100	98	96	A	A	A	98	96	100	106	106	A				
11						A	A 142	100	102	96	96	A	A	A	A	A	A	A	A	A				
12						A	A	A	A	A	A	A	A	A	A	A	94	96	100	A				
13						A	106	102	96	A	96	98	98	A	A	A	A	A	A	A				
14						A 98	A 98	A 120	A 120	96	A 96	A 96	A	96	96	96	98	94	A	A 116				
15						A	124	100	96	96	96	98	104	98	100	98	98	98	104	A				
16						B	B	A	98	96	A	A	A	122	A	98	98	98	102	B				
17						B	102	96	A	94	A	A	A	A	A	A	98	96	100	B				
18						B	B	100	A	A	A	A	A	A	A	A	A	96	98	A				
19						132	A	A	96	102	100	100	92	A	102	96	A	A	A	A				
20						A	112	98	98	98	98	A	A	A	A	A	A	A	A	A				
21						B	108	102	100	100	96	A	100	A	A	98	98	A	A	A				
22						A	E B	98	98	A	A	A	A	98	A	A	A	A	A	A				
23						B	B	98	98	92	A	A	A	A	A	A	A	A	A	90				
24						A	A	100	96	96	96	96	98	100	104	98	98	100	102	A				
25						B	136	110	100	96	96	100	A	98	98	A	A	A	A	A				
26							A	A	A	94	94	94	96	A	A	A	110	102	102	A				
27							A	98	98	98	94	96	A	A	96	A	A	A	A	A				
28							A	A 106	96	96	94	98	98	98	98	96	94	98	104	A				
29							104	102	98	98	98	A	A	A	A	A	A	A	102	A				
30							A	96	96	A	A	98	98	98	A	A	A	A	A	A				
31							A	A	A	A	A	A	A	A	94	96	106	100	104	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	14	26	24	24	22	18	12	13	16	15	18	17	19	2				
MED						115	115	100	98	96	96	98	98	98	98	98	98	98	102	103				
U Q							122	102	100	98	98	98	99	99	100	98	100	101	104					
L Q							106	98	96	96	96	96	98	97	96	96	98	96	100					

JUL. 2016 h'E (KM)

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JUL. 2016 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	104	120	102	100	100	96	96	114	108	120	128	98	122	130	112	130	108	104	116	112	142	104	114	116
2	122	122	98	98	98	96	96	94	96	122	128	122	122	108	116	122	112	102	100	98	98	100	98	96
3	98	100	112	96	92	92	116	106	106	106	100	100	96	102	102	114	112	106	108	108	90	108	98	102
4	104	98	100	94	98	148	88	108	114	106	106	108	98	120	124	120	110	102	100	98	100	110	102	100
5	98	98	96	96	98	120	96	124	124	112	118	108	108	106	110	106	104	106	98	120	88	94	112	110
6	126	108	88	92	96	108	106	112	102	98	102	102	96	96	96	120	106	108	122	104	98	102	106	106
7	96	126	104	100	96	112	128	114	114	104	104	104	136	102	102	162	156	112	108	98	100	100	114	116
8	116	106	100	100	110	110	126	116	112	112	108	106	98	128	108	128	108	102	102	102	98	92	90	90
9	102	98	98	98	98	102	114	114	110	108	104	102	114	98	94	94	94	106	92	114	90	88	88	84
10	100	98	98	94	96	96	126	114	104	104	104	116	100	96	106	160	116	110	106	98	100	96	92	92
11	92	86	88	88	88	86	124	120	112	100	108	98	98	94	96	96	96	98	102	84	84	102	102	132
12	118	98	100	96	96	108	96	92	98	94	92	92	92	94	124	120	114	104	114	98	100	96	94	94
13	88	110	88	80	90	88	114	114	96	104	126	102	102	94	94	116	92	94	102	96	88	106	86	104
14	94	98	100	112	96	96	96	94	94	108	98	98	96	102	164	134	134	112	110	104	102	90	104	100
15	96	100	118	100	106	104	134	114	116	110	106	118	114	132	110	108	102	106	108	100	96	124	110	98
16	98	98	102	98	112	102	106	98	106	100	96	124	100	142	96	106	G	106	106	124	98	112	104	90
17	94	98	98	102	106	110	108	102	96	106	96	94	94	94	92	94	104	110	108	140	96	92	92	92
18	92	92	108	88	92	106	106	106	98	106	98	122	96	100	132	96	110	104	102	96	98	104	90	90
19	90	112	92	86	106	124	86	136	108	108	102	106	100	98	100	104	128	112	92	96	98	104	116	100
20	98	100	96	98	96	96	112	102	102	98	100	96	96	96	98	98	100	98	104	96	94	92	110	134
21	106	96	96	96	96	112	106	116	114	118	108	102	100	98	116	102	G	90	90	90	92	90	82	84
22	84	84	B	B	98	94	110	108	104	96	96	96	140	160	96	94	94	94	98	88	86	86	86	94
23	112	126	106	96	114	126	106	106	100	100	122	114	106	110	92	92	94	94	118	96	108	92	92	102
24	98	94	108	96	104	94	124	120	130	130	124	112	114	112	110	106	104	102	110	98	116	102	96	112
25	100	98	100	86	98	104	140	126	114	108	100	102	92	114	104	92	92	92	90	98	104	92	98	94
26	100	92	102	98	98	94	94	94	142	118	112	126	122	114	94	94	122	112	104	102	104	104	116	98
27	98	98	98	98	98	96	100	116	114	118	116	112	120	116	114	88	104	88	88	102	100	102	102	112
28	98	98	104	96	100	100	96	126	144	122	130	122	110	124	G	120	120	106	100	98	100	96	98	108
29	86	B	B	104	98	B	110	130	110	106	104	108	134	94	98	98	92	90	128	88	88	88	92	86
30	82	100	96	96	110	90	96	106	114	92	100	102	118	136	104	120	94	90	90	90	106	88	108	100
31	100	100	100	106	112	96	96	96	94	92	90	90	128	120	120	120	120	110	102	102	102	100	98	150
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	29	30	31	30	31	31	31	31	31	31	31	31	30	31	29	31	31	31	31	31	31	31
MED	98	98	100	96	98	101	106	114	108	106	104	104	102	106	104	106	106	104	102	98	98	100	98	100
U Q	104	106	103	100	106	110	116	116	114	112	116	114	120	120	114	120	115	108	108	104	102	104	108	110
L Q	94	98	96	94	96	96	96	102	100	100	100	98	96	96	96	96	95	94	98	96	92	92	92	92

IONOSPHERIC DATA STATION Yamagawa

JUL. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.31°12.0'N LON.130°37.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 31	FF 11	FF 41	F 4	F 2	LQ 31	L 4	C 2	CL 32	C 2	CC 11	LC 21	CC 11	CC 11	C 2	C 1	C 2	C 3	CL 22	CL 11	FF 11	FF 31	FF 11	FFF 24
2	FFQ 12	FFQ 13	FQ 21	FFF 41	FQ 31	L 6	LC 41	LC 42	L 2	C 1	C 1	C 1	C 1	C 2	C 1	C 2	CL 21	CL 22	CL 42	L 5	F 6	F 3	FFF 21	FQ 31
3	FF 21	F 3	FF 12	FFF 21	F 2	L 3	C 4	C 4	C 3	C 2	C 2	C 2	L 3	C 3	C 2	C 1	CL 21	CHL 31	CL 14	CL 26	FF 31	FF 24	FQ 41	F 5
4	F 8	FQ 41	F 4	FF 21	F 2	H 1	LC 12	C 3	C 1	C 2	C 2	CL 11	L 3	CL 11	CL 11	CL 11	C 2	C 3	C 5	L 6	F 3	FF 13	FF 71	F 3
5	F 5	F 4	F 5	FQ 41	FFF 21	CL 13	LH 21	CC 22	CL 12	C 2	C 1	C 2	C 2	C 2	C 2	C 3	C 4	C 3	C 5	CC 22	F 6	FF 67	FF 24	FF 24
6	FFF 11	FF 12	FF 11	FF 31	F 3	C 1	CL 31	CH 22	C 2	L 3	C 3	C 2	L 3	L 2	L 1	CL 12	CCL 62	CCL 31	CC 26	C 4	FF 32	FFF 31	FFF 21	F 2
7	FF 41	FF 14	FF 13	FF 41	FF 32	C 1	C 2	C 4	CL 22	C 2	C 2	CL 21	HC 12	C 2	C 2	HC 11	H 1	C 1	C 5	L 4	F 6	F 2	FF 11	FF 22
8	FF 14	FFF 24	FF 21	FQ 31	FFF 22	CLC 12	CC 21	C 4	C 3	C 3	C 2	C 2	L 1	CCH 11	C 1	C 1	C 5	C 3	CH 31	C 4	F 3	F 2	F 3	FQ 21
9	FF 61	FF 31	FF 31	FF 51	F 2	CC 12	C 5	C 3	CL 41	CL 21	C 4	C 3	CCQ 12	L 4	L 4	L 2	LQ 31	CLH 15	L 5	CL 34	FF 52	F 6	F 7	F 5
10	FF 51	FFF 81	FQ 31	FQ 51	FQ 31	LC 21	C 2	C 3	C 3	C 2	C 1	CL 15	L 2	L 3	C 2	H 1	C 1	CL 31	C 4	L 6	F 2	F 3	FF 51	FF 41
11	F 4	FQ 41	FQ 21	FQ 21	FQ 21	L 1	C 1	C 4	C 2	C 4	CH 22	L 4	L 3	LQ 31	LQ 21	L 3	L 3	LH 21	CL 13	L 5	F 3	FF 63	FFF 23	FFF 16
12	FF 14	FF 41	FQ 31	FQ 31	FQ 31	CL 12	L 4	LC 51	LH 21	LH 31	LCH 21	LCH 21	L 2	LC 21	CL 22	CL 22	C 2	C 4	C 3	L 5	F 8	F 4	FQ 31	FQ 51
13	F 5	FF 16	FQ 31	FQ 31	F 2	L 2	C 3	C 4	L 3	CL 21	CC 12	C 2	C 2	L 3	LQ 31	CL 23	LQ 21	LC 32	CL 16	LL 25	F 5	FF 13	FF 42	FF 27
14	FQ 41	F 6	F 6	FFQ 23	FQ 31	L 4	L 4	L 7	L 2	C 2	L 2	L 2	L 2	C 1	H 1	H 1	H 1	C 2	CL 22	CL 32	FF 32	F 2	FFQ 32	FQ 21
15	F 4	FQ 41	FF 11	FF 41	FF 21	CH 21	H 2	C 2	C 2	C 2	C 3	C 1	C 2	H 1	C 2	C 3	C 5	C 3	C 3	LQ 41	F 4	FFF 11	F 1	F 3
16	FF 11	FFF 13	FF 12	FF 21	FF 12	CH 31	CH 22	LQ 21	C 1	C 2	L 4	CL 13	LC 21	HC 11	L 2	C 1		C 3	C 2	CC 26	F 6	FF 14	FF 23	FQ 31
17	FF 25	FF 23	FF 21	F 2	F 1	C 2	C 5	C 2	LQ 31	CH 11	L 2	L 2	L 2	L 2	L 2	LH 11	C 1	C 1	C 2	HL 11	F 4	F 4	FF 42	F 4
18	F 4	F 1	FF 12	FF 11	F 1	CL 21	C 5	C 3	L 5	CL 23	L 3	CL 12	L 3	LQ 31	HCL 12	L 3	CL 41	CH 42	C 4	LH 51	FF 41	FF 13	FQ 41	FQ 31
19	FQ 21	FF 13	FF 31	FQ 11	FF 12	CL 11	LCH 11	HC 13	C 1	CL 11	C 1	C 1	C 1	L 1	C 1	C 1	CC 11	CL 21	LC 21	L 4	F 8	FF 14	FF 13	FQ 51
20	FFF 21	F 5	FF 52	FF 24	FF 33	L 3	CL 35	C 4	C 2	L 3	C 1	L 2	L 3	L 2	L 2	L 1	L 1	LC 21	CL 41	L 2	F 5	F 2	FF 12	FF 13
21	FFQ 13	FFF 22	FQ 21	FFQ 21	F 7	CLH 11	C 2	C 1	C 1	C 1	C 1	C 1	C 2	L 2	CL 24	C 2		LQ 31	LQ 21	LQ 21	F 3	F 5	F 5	F 4
22	F 2	F 4			F 3	LQ 51	C 4	C 4	C 2	L 2	L 2	L 1	HC 11	HC 11	L 1	L 2	L 2	L 3	LL 24	L 4	F 6	F 3	F 1	F 2
23	F 3	FF 21	F 2	F 3	F 1	CC 11	C 4	C 3	C 2	C 2	CC 12	CC 11	CL 22	CCL 12	L 6	L 4	L 2	L 3	CL 13	L 4	FF 13	FF 21	F 3	FF 31
24	F 8	F 8	FF 17	FF 51	F 6	L 8	CC 22	C 3	H 1	HC 11	C 1	C 1	C 1	C 2	C 2	C 2	C 3	C 4	C 1	L 7	FF 13	F 3	F 4	FFF 11
25	FF 12	FF 22	FF 12	FQ 11	F 1	C 1	HL 11	CL 22	C 1	C 3	C 2	C 2	L 3	C 1	C 2	L 4	L 6	L 5	LC 41	LL 83	FF 52	F 3	F 4	FF 41
26	FF 21	FF 42	FF 22	FQ 21	FQ 31	FF 61	L 6	LQ 41	HC 11	C 3	C 2	C 1	C 1	CC 11	L 5	L 5	CL 12	CL 32	CL 61	CL 62	FF 72	FF 61	FF 25	F 8
27	F 5	FQ 21	FQ 31	F 4	F 3	F 5	LH 21	C 2	C 3	C 2	C 1	C 2	CL 12	CL 31	C 2	LH 51	CL 54	LC 73	LC 83	CLH 59	FF 65	FF 55	FF 64	FF 24
28	FFF 33	FFF 22	FF 11	FF 41	F 4	FF 31	LC 31	CL 23	H 1	C 2	C 1	CL 11	C 2	C 1		C 1	C 1	C 3	C 5	LL 52	FF 62	F 4	F 4	FF 11
29	F 1			F 1	FF 41		CH 11	CL 21	C 3	C 5	C 2	CLH 12	HL 23	L 2	L 1	L 1	L 2	LH 21	CL 11	LC 32	F 2	F 1	F 1	FF 32
30	FF 31	FF 31	F 3	F 5	FF 13	FFF 11	LCH 22	CC 21	C 2	L 3	L 2	C 4	C 1	H 1	CL 21	CL 11	L 1	LC 31	L 5	LC 72	FF 16	F 3	FFF 21	F 5
31	FQ 51	FQ 21	F 3	FF 23	FF 12	F 6	L 4	LQ 31	L 3	L 3	L 3	L 3	CL 11	CL 11	C 1	C 1	CL 11	CL 42	CL 42	CL 42	FF 23	F 6	F 3	FF 11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

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IONOSPHERIC DATA STATION Okinawa

JUL. 2016 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 54	54	X 46	47	47	42															X 65	X 66	X 53	X 51
2	50	54	54	50	48	44															X 76	X 72	X 67	X 66
3	X 65	X 60	X 60	X 57	56	46															X 57	X 52	51	51
4	51	52	52	48	49	42															X 76	X 52	A	54
5	56	57	58	52	54	47															X 73	X 55	X 49	49
6	52	51	46	44	45	42															X 95	X 58	X 52	A
7	54	56	51	54	52	36															X 76	X 53	X 54	X 52
8	55	57	A	50	50	56	51														X 73	X 72	X 73	X 70
9	X 69	X 66	71	62	X 58	X 48															X 76	X 66	X 62	X 57
10	X 55	57	65	55	47	50															X 77	X 75	X 74	X 78
11	X 72	65	60	62	X 55	X 48															X 80	X 65	X 59	X 56
12	57	57	60	55	51	50															X 80	X 79	X 72	76
13	74	76	71	71	72	49															X 80	X 66	X 62	X 64
14	X 64	65	63	62	56	50															X 77	X 66	X 62	X 60
15	67	67	66	64	62	X 52															X 64	X 63	X 61	X 58
16	X 58	X 58	X 55	X 54	55	48															X 84	X 81	X 81	X 95
17	90	87	87	94	88	67	70	78													X 68	X 65	X 68	X 64
18	X 66	X 62	X 62	X 55	58	50															X 82	X 76	X 66	67
19	76	X 76	X 75	X 72	X 58	X 51															X 89	X 53	X 50	54
20	60	57	61	54	48	35															X 87	X 73	X 45	X 47
21	X 50	X 49	X 48	X 46	X 46	X 45															X 76	X 73	X 65	X 59
22	X 58	X 58	X 59	X 50	X 48	X 46															X 94	X 58	X 57	X 54
23	X 56	X 56	X 55	X 53	X 52	X 47															X 81	X 68	X 54	X 50
24	52	57	55	60	57	54	56														X 65	X 61	X 58	X 57
25	56	63	63	56	X 48	X 49															X 85	X 79	X 68	X 64
26	X 61	X 64	64	63	56	53	51				C						A				A	X 67	66	67
27	66	64	64	59	57	X 36															X 74	X 60	X 54	X 49
28	55	55	53	48	46	42	46														X 85	X 76	X 60	X 57
29	X 56	X 48	X 43	X 36	37	X 32															X 68	X 50	X 49	X 49
30	X 46	X 46	X 47	A	X 29	X 32															X 64	X 52	X 46	49
31	51	51	49	48	44	37															X 74	X 47	X 34	X 37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	31	5	1													30	31	30	30
MED	56	57	60	54	52	47	51	78													X 76	X 66	X 60	X 57
U Q	66	64	64	62	57	50	63														X 82	X 73	X 66	X 64
L Q	54	54	52	50	47	42	48														X 73	X 55	X 52	X 51

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	48	F 42	40	F 36	F 35	F 34	40	54	64	58	56	52	50	57	62	74	78	78	77	76	59	60	47	45
2	F 42	F 43	F 46	F 38	F 38	F 34	51	52	48	52	52	49	54	56	56	64	59	60	56	62	70	66	61	60
3	59	54	54	51	48	40	43	68	50	A	54	A	63	A	50	61	66	54	68	63	51	46	F 39	F 40
4	F 40	F	F 38	F 34	F 30	F 31	40	A	54	50	56	U R 51	57	63	74	66	64	61	64	68	70	46	A	F 46
5	F 48	F 46	F 51	F 37	F 37	F 34	43	57	57	E G 45	48	51	57	59	59	69	82	90	94	86	67	49	43	F 40
6	F 41	F 40	F 38	F 34	F 35	F 34	42	48	50	59	56	A	54	57	61	62	55	59	72	84	89	52	46	A
7	F 44	F 42	F 40	F 38	F 35	F 26	39	57	A	60	A	A	A	61	70	70	74	80	83	88	70	47	48	46
8	F 44	F 46	A	F	F	F 44	F 45	46	47	A	A	A	A	58	68	62	A	A	A	A	J R 67	66	67	64
9	63	60	F 63	F 53	52	42	39	40	46	A	A	A	A	A	A	A	A	A	65	62	70	60	56	51
10	49	F 47	F 56	F 48	F 40	F 40	48	56	50	A	61	J R 52	R 58	63	J R 68	66	76	82	72	70	71	69	68	72
11	66	F 56	F 51	F 54	V 49	42	48	57	59	51	A	A	60	74	78	74	73	89	94	81	74	59	53	50
12	F 50	F 49	F 47	F 43	F 42	F 35	48	55	52	53	57	62	66	68	80	79	76	83	91	85	74	73	66	F 68
13	F 64	F 68	F 61	F 64	F 60	F 41	45	52	56	62	59	61	66	71	74	78	75	82	89	90	74	60	56	58
14	58	F 50	F 49	F 50	F 47	F 41	45	66	65	A	52	55	64	73	78	81	79	76	78	83	71	60	56	54
15	F 59	F 60	F 56	F 58	56	46	53	52	55	58	53	48	E G 46	A	66	75	78	67	A	52	58	57	55	52
16	52	F 50	49	48	F 46	F 36	47	56	55	60	58	56	64	62	65	78	86	A	70	75	78	75	75	89
17	F 83	F 78	F 79	F 72	F	F 57	F 61	F 68	63	61	62	54	60	61	67	88	94	84	89	80	62	58	62	58
18	60	56	56	49	F 48	F 42	47	59	61	61	V 63	61	62	66	74	79	82	88	98	96	76	70	60	F 60
19	F 65	70	69	66	52	45	44	57	55	63	J R 57	58	59	60	58	61	75	84	92	89	83	47	V 44	F 47
20	F 46	F 47	F 52	F 44	F 37	26	39	55	64	57	68	68	A	71	85	82	86	105	93	93	81	67	39	41
21	44	43	42	40	40	39	43	64	64	69	68	A	67	69	70	73	78	86	87	83	70	67	59	53
22	52	52	53	44	42	40	44	56	60	66	55	54	58	58	60	70	76	81	96	106	88	52	51	48
23	50	50	49	47	46	41	41	57	58	50	48	A	58	58	A	A	84	80	78	80	75	62	48	44
24	F 43	F 44	F 46	F 50	F 50	F	48	51	53	48	53	55	59	60	58	60	67	A	76	62	59	55	52	51
25	F 49	F 53	F 50	F 48	42	43	60	47	46	E G 48	53	A	57	64	74	80	82	76	76	83	79	73	62	58
26	55	58	F 54	F 53	F 48	F 42	F 43	54	54	58	C	56	64	61	62	57	A	A	56	60	A	61	F 56	F 56
27	F 54	F 52	F 55	F 50	F 50	30	39	42	51	55	57	53	57	A	A	A	75	85	88	88	68	54	48	43
28	F 44	F 41	F 42	F 39	F 32	F 27	F 38	48	56	54	52	55	A	54	58	70	80	86	90	86	79	70	54	51
29	50	V 42	37	30	F 28	26	40	46	46	A	A	A	53	A	66	74	81	94	96	92	62	44	43	43
30	40	40	41	A	23	26	41	56	58	50	50	57	55	80	83	85	94	105	93	83	58	46	J R 40	40
31	F 42	F 37	F 36	F 35	F 30	F 29	37	59	55	48	48	E G 44	51	56	57	63	72	80	89	109	68	41	28	31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	29	29	30	31	30	30	25	25	21	26	26	28	28	28	26	29	30	30	31	30	30
MED	F 50	F 50	F 50	F 48	F 42	F 40	43	56	55	57	56	55	58	61	66	72	77	82	87	83	70	60	54	51
U Q	59	56	F 55	F 52	48	42	48	57	59	60	58	58	63	68	74	78	82	86	92	88	76	67	60	58
L Q	F 44	F 43	42	F 38	F 35	31	40	51	50	50	52	52	55	58	60	64	74	76	72	70	67	49	46	44

JUL. 2016 foF2 (0.1MHz)

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JUL. 2016 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L 392	400	436	A	452	452	R 436	U A 472	A	U A 416	396	L 356					
2								L	L	432	436	452	A	448	U A 452	A	424	396	U L 404	L				
3								L 360	L	A	448	A	A	A	A	428	428	408	364					
4								A	U L 412	424	420	452	A	A	U A 448	420	412	A	L					
5								L	L 392	448	444	452	U A 444	A	A	A	U A 436	A	A	A				
6								L	400	416	444	A	464	A	A	A	U A 424	396	368					
7								A	A	A	A	A	A	U A 460	A	A	A	A	U A 376					
8								U L 372	A	A	A	A	A	U A 480	A	444	A	A	A	A				
9								U L 364	396	A	A	A	A	A	A	A	A	A	A					
10								A	L 436	A	R 452	476	464	456	460	A	432	416						
11								U L 388	432		A	A	A	A	A	A	A	400	L					
12								L		L	476	480	A	468	468	A	456	424	384					
13								A	U L 464	U L 464	U L 484	480	A	452	A	U L 444	440	L 440	L 384					
14								L	L 428	A	464	472	R 472	468	448	468	456	440	388					
15									A	A	A	464	464	A	460	U A 468	A	A	A					
16								L	U L 416	L 456	452	U A 472	472	R 468	472	452	A	A	A					
17							L	L	L 428	448	468	U L 500	R 484	468	460	452	L 436	432	L 392					
18								L		U L 464	U L 484	480	472	480	460	U A 472	A	A	A					
19								U L 408	U L 456	444	U L 468	U L 460	L 480	476	U A 480	452	432	A	380	L				
20								A	A	U L 480	A	A	A	A	A	U A 456	A	416	L					
21								L		L 448	460	A	A	A	468	468	448	436	368					
22							L	L	L 424	444	452	R 456	460	R 456	468	452	428	404	368					
23							L	A	L 404	L 428	A	A	A	A	A	A	A	A	A					
24								U L 360	404	U L 428	436	464	460	U A 464	A	A	A	A	360					
25								L	L 384	480	A	A	A	A	A	A	A	A	A	A				
26								L	L 412	L 424	C	A	U A 448	U A 452	A	436		A	A					
27									U L 416	424	A	R 436	440	A	A	A	420	U A 396	A					
28									404	420	440	A	A	A	428	428	A	U A 444	A					
29								L	U L 380	A	A	A	444	A	A	R 408	L 452	392	368	L				
30								L	L 376	L	A	U A 456	448	A	444	432	408	392	L					
31								L	U L 388	L	U L 440	436	436	440	440	U A 428	416	400	U A 368					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	22	19	18	18	17	16	16	18	18	18	15					
MED								U L 372	L 408	444	452	462	460	462	460	448	430	406	368					
U Q								L 392	L 428	U L 456	U L 468	476	472	468	468	U A 456	440	432	L 384					
L Q								L 360	L 396	424	440	452	446	452	448	428	420	396	368					

JUL. 2016 foF1 (0.01MHz)

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JUL. 2016 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A 256		288	A	A	A	A	368	364	336	320	280	236	A				
2							A	A	A	A	A	360	360	356	356	A	312	284	236	A				
3							A	A	U A 276	A	328	U A 340	A	A	A	A	332	284	232	A				
4							A 232		U A 272	320	324	A	A	A	A	A	A	284	A	A				
5							A 256		288	A	A	A	364	368	356	348	312	280	A	A				
6							A 232		292	316	A	A	A	A	A	A	A	A	228	A				
7							A	U A 252	288	320	348	352	340	348	388	360	328	304	248	A				
8							192	220	280	316	352	A	A	352	356	344	328	292	248	A				
9							176	252	292	320	344	360	360	360	348	A	A	A	A	A				
10							A	232	316	A	A	A	A	A	372	356	332	292	244	A				
11							172	252	284	324	U A 348	A	A	A	A	A	A	A	A	A				
12							A	256	A	A	A	A	A	A	A	A	328	296	244	A				
13							A	244	292	A	A	364	364	372	352	344	332	292	A	A				
14							A	228	A	A	A	A	A	A	A	372	A	A	A	A				
15							A	252	A	A	A	A	352	372	376	364	324	300	A	A				
16							A	A	A	A	A	A	A	A	A	356	340	292	U A 228	A				
17							A	A	288	A	A	A	A	A	A	A	A	284	A	A				
18							A	A	A	A	360	A	352	A	344	364	336	304	A	A				
19							A	252	A	A	A	A	A	A	A	A	A	292	U A 236	A				
20							A	240	288	U A 316	A	A	A	A	A	A	A	A	A	A				
21							A	A	284	324	356	A	368	364	A	340	336	A	A	A				
22							184	U A 232	A	A	A	A	376	376	R 368	R 364	R 336	A	A	A				
23							A	A	A	U A 328	U A 340	B	A	A	A	A	A	A	A	A				
24							A	A	284	324	R 356	R 372	364	372	364	348	324	280	A	A				
25							A	A	A	316	336	364	368	364	352	344	A	A	A	A				
26							A	224	264	340	C	348	360	360	352	344		A	A	A				
27							A	228	280	A	A	344	360	352	A	328	312	276	A	A				
28							A	216	272	308	316	348	356	356	348	328	312	268	212	A				
29							B	216	284	308	324	A	A	A	A	A	A	268	U A 232	B				
30							A	228	A	316	332	344	356	344	356	A	308	268	224	A				
31							A	A	A	A	A	A	A	368	340	336	308	272	216	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	21	19	15	14	11	15	17	17	18	19	21	14					
MED							180	232	284	320	342	352	360	364	356	346	328	284	234					
U Q							188	252	288	324	352	364	364	370	366	360	332	292	244					
L Q							174	228	280	316	328	344	356	354	350	340	312	278	228					

JUL. 2016 foE (0.01MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	J A 48	J A 28	J A 36	J A 63	J A 23	23	34	J A 33	J A 59	J A 66	J A 42	J A 42	39	49	J A 60	J A 47	34	30	18	J A 28	J A 21	J A 48	J A 21
2	J A 45	J A 80	J A 118	J A 49	J A 54	J A 66	J A 68	J A 32	J A 34	J A 52	J A 40	44	J A 58	G	J A 46	J A 47	J A 43	32	J A 36	J A 21	J A 66	J A 38	J A 48	J A 49
3	J A 22	J A 18	J A 31	J A 26	J A 83	J A 43	J A 38	J A 30	J A 54	J A 75	J A 56	J A 62	J A 69	J A 73	J A 47	J A 59	37	38	28	J A 23	J A 38	J A 40	J A 28	J A 50
4	J A 31	J A 63	J A 116	J A 107	J A 72	J A 43	35	81	J A 103	36	J A 46	50	J A 59	J A 60	J A 56	40	J A 43	J A 47	J A 46	36	J A 45	J A 20	80	63
5	J A 91	J A 84	J A 128	J A 59	J A 33	33	25	32	J A 39	65	J A 41	44	J A 46	J A 54	46	J A 66	J A 44	56	J A 44	J A 32	J A 55	J A 31	J A 31	29
6	J A 32	J A 32	J A 32	J A 46	J A 23	26	18	32	40	41	J A 39	J A 88	J A 62	J A 89	J A 58	J A 70	J A 58	38	J A 32	J A 55	J A 58	J A 86	J A 82	J A 80
7	J A 50	J A 43	J A 49	J A 45	J A 32	18	J A 37	J A 50	J A 100	J A 63	J A 121	J A 58	J A 70	J A 70	J A 56	J A 66	J A 57	J A 44	J A 39	J A 31	J A 142	J A 82	J A 47	18
8	J A 64	J A 83	J A 59	J A 82	J A 62	J A 43	28	J A 31	J A 47	J A 48	J A 41	J A 59	J A 68	J A 60	J A 53	38	J A 62	J A 133	J A 82	J A 90	J A 96	J A 76	J A 66	J A 32
9	J A 18	J A 22	E B 13	J A 30	J A 21	J A 17	21	J A 44	35	43	J A 51	J A 60	J A 166	J A 112	J A 148	J A 94	J A 108	J A 101	J A 74	J A 65	J A 37	35	J A 40	14
10	21	J A 33	J A 53	J A 69	J A 47	J A 28	J A 38	J A 45	J A 40	J A 62	J A 92	J A 47	J A 60	J A 46	40	J A 52	37	36	J A 50	J A 33	J A 21	21	J A 23	J A 23
11	J A 40	J A 31	J A 22	J A 19	18	E B 13	20	J A 42	37	J A 44	J A 107	J A 62	J A 87	J A 90	J A 82	J A 62	J A 90	86	J A 44	J A 45	J A 45	28	J A 46	J A 46
12	J A 56	J A 51	J A 49	J A 73	J A 89	J A 50	J A 32	J A 34	J A 46	J A 40	J A 57	J A 53	J A 52	J A 57	J A 54	J A 72	37	34	29	26	J A 33	J A 75	J A 48	J A 64
13	J A 30	J A 41	J A 46	J A 39	J A 50	J A 30	21	J A 52	J A 59	J A 66	J A 48	J A 49	J A 62	J A 60	J A 50	47	J A 64	40	J A 57	J A 65	J A 54	J A 62	J A 42	J A 35
14	J A 48	J A 37	J A 49	J A 49	J A 42	J A 22	25	34	J A 34	J A 53	J A 57	J A 47	J A 57	42	J A 42	42	J A 39	J A 47	J A 44	J A 50	J A 65	24	22	20
15	J A 36	J A 52	J A 31	J A 28	18	J A 42	18	33	J A 87	J A 64	J A 76	J A 60	44	J A 58	J A 68	J A 59	J A 80	J A 68	J A 89	J A 105	J A 79	J A 64	J A 51	J A 40
16	J A 39	J A 33	J A 22	J A 17	J A 33	J A 27	J A 54	J A 31	J A 39	J A 62	J A 40	J A 69	J A 51	J A 68	44	40	J A 73	J A 85	J A 42	J A 107	J A 94	J A 109	J A 71	J A 50
17	J A 26	J A 51	J A 53	J A 80	J A 58	J A 36	J A 27	J A 61	J A 29	J A 45	J A 48	J A 41	42	J A 42	J A 40	37	J A 60	32	J A 32	21	J A 39	J A 20	E B 13	E B 13
18	J A 26	J A 18	J A 15	20	J A 17	J A 25	24	J A 41	J A 56	J A 53	J A 45	43	44	45	43	J A 53	J A 63	J A 76	J A 118	J A 118	J A 97	J A 65	J A 45	J A 45
19	J A 33	J A 21	J A 15	19	J A 22	J A 40	19	G	J A 37	38	J A 43	J A 42	47	J A 45	J A 65	38	J A 41	J A 71	J A 49	J A 18	J A 55	J A 69	J A 58	J A 74
20	J A 34	J A 52	J A 38	J A 26	J A 25	18	J A 28	J A 48	J A 84	J A 50	J A 72	J A 134	J A 88	55	J A 52	50	J A 51	J A 35	J A 40	J A 57	J A 33	J A 42	J A 22	J A 37
21	J A 21	E B 13	18	J A 52	J A 40	J A 59	J A 52	J A 27	J A 45	J A 46	J A 46	J A 73	J A 63	J A 69	J A 47	40	G	J A 35	J A 40	J A 52	J A 55	J A 36	J A 31	J A 19
22	J A 30	J A 33	17	E B 13	18	18	G	J A 29	J A 36	J A 37	J A 45	J A 52	G	41	40	40	G 31	J A 32	J A 26	J A 28	J A 20	J A 24	17	E B 13
23	E B 13	J A 21	J A 22	J A 22	J A 16	J A 19	J A 23	J A 74	J A 34	38	J A 51	J A 53	J A 68	J A 48	J A 108	J A 102	J A 80	J A 48	J A 43	J A 45	J A 54	J A 48	J A 17	19
24	J A 51	J A 35	J A 38	J A 28	J A 40	J A 57	J A 27	J A 34	J A 48	36	39	45	44	48	J A 55	J A 54	J A 66	J A 69	J A 33	J A 22	J A 23	J A 25	J A 48	J A 34
25	J A 41	J A 20	J A 40	J A 19	J A 19	E B 13	J A 20	38	J A 42	J A 52	J A 74	J A 110	J A 53	J A 54	J A 52	47	J A 56	84	J A 80	J A 44	J A 54	J A 49	18	J A 48
26	J A 26	J A 31	J A 32	J A 49	J A 64	J A 26	J A 20	28	35	G	C	J A 48	46	J A 50	J A 50	41	J A 73	J A 74	J A 38	J A 44	J A 65	J A 65	J A 75	J A 32
27	J A 67	J A 53	J A 54	J A 39	J A 35	J A 19	18	32	32	J A 50	J A 61	41	45	J A 72	J A 143	J A 107	J A 42	J A 46	J A 78	J A 51	J A 92	J A 64	J A 102	J A 71
28	J A 38	J A 37	J A 37	J A 21	J A 21	J A 20	J A 34	J A 40	34	37	36	J A 51	J A 77	J A 51	J A 41	J A 48	J A 45	J A 49	J A 49	J A 30	J A 22	J A 21	J A 60	43
29	J A 43	J A 20	J A 17	20	19	J A 19	G	23	35	J A 78	J A 60	J A 55	J A 82	J A 119	J A 52	J A 38	J A 32	33	27	E B 16	E B 13	E B 13	18	19
30	J A 16	E B 13	J A 49	J A 32	J A 28	J A 30	J A 38	J A 32	J A 35	J A 43	J A 57	J A 46	J A 42	J A 52	G	38	G 29	G 21	G 21	J A 34	J A 21	J A 22	J A 19	J A 36
31	J A 45	J A 35	J A 37	E B 13	J A 18	J A 38	J A 80	J A 66	J A 38	J A 44	J A 42	J A 43	J A 48	J A 42	44	J A 44	36	34	J A 40	J A 23	J A 24	19	J A 30	J A 26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 34	J A 35	J A 37	J A 32	J A 33	J A 27	J A 25	J A 34	J A 39	J A 48	J A 50	J A 51	J A 57	J A 54	J A 50	J A 48	J A 47	J A 46	J A 42	J A 36	J A 54	J A 38	J A 45	J A 35
U Q	J A 45	J A 51	J A 49	J A 49	J A 54	J A 42	J A 37	J A 45	J A 48	J A 62	J A 61	J A 60	J A 68	J A 69	J A 56	J A 62	J A 64	J A 71	J A 50	J A 55	J A 65	J A 65	J A 58	J A 49
L Q	J A 26	J A 21	J A 22	20	19	19	20	J A 31	J A 35	40	J A 42	44	45	45	44	40	37	34	32	J A 23	J A 28	J A 22	22	20

JUL. 2016 foEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	22	30	31	40	53	39	39	39	47	54	42	30	28	17	E B 13	17	E B 13	E B 13
2	E B 13	E B 13	17	E B 13	E B 13	E B 13	38	28	32	37	37	39	48	G	45	47	42	31	29	19	20	E B 13	19	18
3	E B 13	E B 13	22	16	E B 13	E B 13	19	27	39	A A 75	42	A A 62	50	A A 73	46	37	35	31	24	19	17	20	18	22
4	20	29	E B 13	E B 13	E B 13	E B 13	28	A A 81	33	36	40	44	51	52	45	38	36	42	32	31	32	16	A A 80	E B 13
5	19	23	22	18	21	E B 13	23	29	36	37	39	42	44	54	46	62	44	43	42	24	26	22	26	17
6	16	E B 13	E B 13	E B 13	E B 13	E B 13	18	30	33	37	38	A A 88	41	52	50	55	42	33	26	35	40	18	18	A A 80
7	E B 13	24	E B 13	E B 13	E B 13	E B 13	27	45	A A 100	46	A A 121	A A 58	A A 70	46	50	66	51	44	38	29	31	20	18	E B 13
8	E B 13	E B 13	A A 59	20	20	E B 13	26	29	42	A A 48	A A 41	A A 59	A A 68	48	49	37	A A 62	A A 133	A A 82	A A 90	52	54	30	16
9	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	20	30	34	A A 43	A A 51	A A 60	A A 166	A A 112	A A 148	A A 94	A A 108	A A 101	44	44	29	26	30	E B 13
10	17	21	E B 13	29	23	E B 13	29	38	34	A A 62	43	41	43	46	39	50	36	35	50	31	20	18	20	19
11	20	E B 13	E B 13	E B 13	E B 13	E B 13	20	28	35	40	A A 107	A A 62	55	57	55	51	60	32	38	30	27	24	16	E B 13
12	23	28	20	E B 13	E B 13	E B 14	19	27	43	37	45	43	50	47	44	54	36	34	28	25	20	17	21	20
13	24	20	19	16	19	E B 13	18	38	41	35	39	46	61	42	50	39	38	34	32	33	34	24	21	26
14	22	16	E B 13	20	19	E B 13	21	29	32	A A 53	39	43	46	41	42	41	39	36	30	37	37	18	18	E B 13
15	20	17	21	19	E B 13	17	18	30	44	46	52	44	44	A A 58	43	47	57	53	A A 89	23	24	31	32	30
16	24	20	E B 13	E B 13	20	E B 13	20	26	32	38	36	47	41	44	44	40	57	A A 85	40	58	48	38	19	18
17	19	28	17	E B 13	17	19	20	36	G 20	32	42	38	42	40	40	36	42	32	28	20	19	E B 13	E B 13	E B 13
18	18	E B 13	E B 13	E B 13	E B 13	18	22	30	41	41	41	42	44	44	43	47	62	69	92	86	40	34	31	20
19	19	E B 13	E B 13	E B 13	E B 13	17	19	G	34	37	38	40	44	43	48	37	35	62	34	17	44	26	22	20
20	E B 13	22	21	20	17	E B 13	22	43	46	40	48	65	A A 88	48	50	46	49	33	38	26	20	28	18	18
21	E B 13	E B 13	E B 13	E B 13	16	34	28	26	38	42	44	A A 73	55	53	42	38	G	30	25	25	25	22	21	E B 13
22	16	E B 13	E B 13	E B 13	E B 13	E B 13	G	26	31	35	41	42	G	41	40	40	G 30	30	24	25	16	19	E B 13	E B 13
23	E B 13	E B 13	E B 13	17	E B 13	E B 13	18	45	31	36	45	A A 53	51	48	A A 108	A A 102	79	46	42	35	45	20	E B 13	E B 13
24	E B 13	27	24	18	19	37	22	31	36	35	38	42	43	46	54	52	64	A A 69	30	18	16	20	30	21
25	19	17	24	18	E B 13	E B 13	18	26	36	37	48	A A 110	50	53	48	46	44	72	39	32	49	37	E B 13	29
26	20	19	19	16	E B 13	20	17	26	34	G	C	46	45	45	48	38	A A 73	A A 74	34	34	A A 65	25	28	19
27	32	E B 13	36	E B 13	20	E B 13	18	30	31	41	46	40	42	A A 72	A A 143	A A 107	37	40	50	39	40	46	32	20
28	22	28	19	E B 13	E B 13	E B 13	21	27	33	36	36	50	A A 77	49	38	37	44	44	39	18	E B 13	16	44	23
29	18	E B 13	E B 13	E B 13	E B 13	E B 13	G	23	33	A A 78	A A 60	A A 55	39	A A 119	50	37	32	31	25	E B 16	E B 13	E B 13	E B 13	E B 13
30	E B 13	E B 13	E B 13	A A 32	E B 13	19	29	28	31	39	46	46	41	50	G	35	G 26	G 20	G 16	22	E B 13	18	E B 13	20
31	17	20	E B 13	E B 13	E B 13	E B 13	28	26	31	33	35	37	42	40	42	43	36	33	36	22	20	E B 13	21	E B 13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	18	16	E B 13	E B 13	E B 13	E B 13	20	29	34	38	42	46	45	48	46	46	42	36	34	26	26	20	20	18
U Q	20	22	21	18	19	17	26	31	39	A A 43	48	A A 59	A A 55	A A 53	50	54	57	A A 62	42	35	40	26	30	20
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	18	26	32	36	39	42	42	43	42	38	36	32	28	20	19	17	E B 16	E B 13

JUL. 2016 fbEs (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	13	13	13	13	13	13	13	16	17	20	21	24	32	24	20	18	14	13	13	13	13	13	13
2	13	13	13	13	13	13	13	13	15	20	24	23	24	29	25	26	20	15	12	14	13	13	13	13
3	13	13	13	13	13	13	14	14	14	18	21	22	24	24	26	20	20	14	14	12	12	13	13	13
4	13	13	13	13	13	13	14	14	14	18	22	25	24	30	26	22	19	14	13	14	13	13	13	13
5	13	12	13	13	13	13	14	14	14	19	24	22	24	30	27	25	18	14	16	13	13	13	13	13
6	13	13	13	13	13	13	14	14	14	19	21	23	30	24	25	21	19	19	12	14	13	13	13	13
7	13	13	13	13	13	13	15	14	16	16	22	25	24	25	25	22	20	24	13	13	13	13	13	13
8	13	13	13	13	13	13	14	14	14	18	24	24	29	28	29	22	21	16	14	12	13	13	13	13
9	13	13	13	13	13	13	12	14	16	21	29	22	25	22	23	24	22	20	14	12	13	13	13	13
10	13	13	13	13	13	13	14	13	14	19	36	25	28	30	29	25	21	20	14	12	13	13	13	13
11	13	13	13	13	13	13	14	15	14	21	20	21	22	30	24	22	21	20	14	14	13	13	13	13
12	13	13	13	13	13	14	14	14	15	22	24	24	26	24	26	24	22	18	14	14	13	13	13	13
13	13	13	13	13	13	13	14	14	15	18	20	21	26	29	25	22	18	18	14	14	13	13	13	13
14	13	13	13	13	13	13	14	13	14	21	23	28	30	21	23	22	20	15	13	13	13	13	13	13
15	13	13	13	13	13	13	15	14	16	23	25	23	31	28	28	23	20	17	14	14	12	13	13	13
16	13	13	13	13	13	13	13	13	14	20	27	32	29	30	26	24	20	16	14	12	13	13	13	13
17	13	13	13	13	13	13	14	14	16	18	20	25	25	29	30	23	22	18	15	15	13	13	13	13
18	13	13	13	13	13	13	13	14	20	24	28	38	30	32	31	23	21	20	16	13	13	13	13	13
19	13	13	13	13	13	13	14	18	16	19	25	30	31	29	29	30	20	14	14	13	13	13	13	13
20	13	13	13	13	13	13	14	14	16	20	24	28	32	30	24	21	21	17	13	13	13	13	13	13
21	13	13	13	13	13	13	14	14	20	22	30	43	33	32	31	25	20	16	14	14	13	13	13	13
22	13	13	13	13	13	13	14	14	17	17	28	28	31	30	24	25	24	17	13	12	13	12	13	13
23	13	13	13	13	13	13	14	16	18	20	25	45	33	29	28	31	21	19	13	14	13	13	13	13
24	13	13	13	13	13	13	12	13	14	20	21	20	28	30	31	22	22	16	14	14	13	13	13	13
25	13	13	13	13	13	13	13	14	18	19	22	29	22	32	24	21	21	14	13	13	13	13	13	13
26	13	13	13	13	13	13	14	14	18	17	C	25	24	23	24	22	20	15	14	13	13	13	13	13
27	13	13	13	13	13	13	14	13	16	16	20	20	21	22	22	21	15	14	14	13	13	13	13	13
28	13	13	13	13	13	13	14	14	14	15	20	23	25	23	23	20	20	14	12	13	13	13	13	13
29	13	13	13	13	13	13	14	14	15	18	21	24	22	29	29	21	17	17	15	16	13	13	13	13
30	13	13	13	13	13	13	14	14	17	15	20	21	29	24	21	20	18	15	13	12	13	13	13	13
31	13	13	13	13	13	13	14	13	14	16	17	21	23	21	20	20	17	14	13	14	13	13	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	13	13	13	13	13	13	14	14	15	19	22	24	26	29	25	22	20	16	14	13	13	13	13	13
U Q	13	13	13	13	13	13	14	14	16	20	25	28	30	30	29	24	21	18	14	14	13	13	13	13
L Q	13	13	13	13	13	13	14	13	14	17	20	22	24	24	24	21	19	14	13	13	13	13	13	13

JUL. 2016 fmin (0.1MHz)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	326	F 287	322	F 283	F 322	F 314	354	333	357	339	282	303	266	297	294	300	310	297	327	335	316	351	285	292
2	F 269	F 325	F 323	F 297	F 328	F 328	354	381	326	320	298	270	298	309	310	331	307	304	278	293	321	302	292	301
3	298	296	312	313	335	320	304	385	332	A	312	A	314	A	255	308	330	291	331	372	323	314	F 305	F 284
4	F 291	F	F 324	F 309	F 321	F 341	346	A	336	348	321	U R 256	284	282	305	311	303	328	325	325	343	321	A	F 286
5	F 304	F 296	F 334	F 353	F 328	F 329	357	362	395	G	265	277	308	302	280	271	285	310	326	342	332	305	304	F 289
6	F 321	F 295	F 309	F 322	F 318	F 360	404	348	309	343	311	A	270	279	304	302	274	278	289	307	357	349	293	A
7	F 294	F 310	F 315	F 320	F 324	F 341	348	356	A	351	A	A	A	275	283	267	268	286	298	333	336	303	280	270
8	F 267	F 304	A	F	F	F 324	F 354	322	297	A	A	A	A	262	309	316	A	A	A	A	J R 291	278	287	279
9	278	291	F 323	F 300	318	370	375	300	312	A	A	A	A	A	A	A	A	A	283	300	320	325	302	282
10	294	F 275	F 328	F 326	F 341	F 290	362	357	283	A	329	R	R 274	292	J R 286	264	293	312	309	285	307	290	285	305
11	300	F 311	F 292	F 310	V 306	316	349	344	361	347	A	A	272	284	297	279	265	294	314	320	325	298	289	297
12	F 310	F 298	F 337	F 328	F 336	F 313	369	379	379	320	306	308	297	276	283	283	268	287	313	315	305	298	302	F 278
13	F 291	F 314	F 286	F 314	F 339	F 398	329	327	316	308	293	300	292	291	284	306	281	295	315	331	325	305	289	284
14	290	F 296	F 287	F 307	F 333	F 304	306	363	379	A	305	269	291	293	297	287	288	286	288	321	312	298	296	286
15	F 296	F 304	F 295	F 328	331	306	361	351	314	340	307	229	G	A	297	308	330	343	A	290	292	288	297	300
16	295	F 286	300	308	F 313	F 310	323	358	340	331	292	270	288	281	266	291	315	A	301	301	310	303	282	291
17	F 288	F 284	F 303	F 310	F	F 321	F 310	F 356	346	329	318	251	278	290	274	296	316	293	325	333	289	293	302	298
18	295	291	306	317	F 325	F 341	328	344	338	329	V 318	308	289	284	281	272	278	294	321	333	323	305	301	F 267
19	F 286	311	319	315	316	316	329	339	329	358	J R 297	298	301	290	263	273	286	294	316	328	365	300	V 286	F 286
20	F	F 301	F 341	F 342	F 338	317	337	342	355	312	298	A 270	A	235	262	247	265	311	304	323	311	340	333	290
21	285	295	296	295	306	323	308	332	314	326	341	A	303	307	304	294	287	310	319	321	300	310	305	303
22	300	300	322	296	303	326	349	343	354	370	332	275	294	272	278	278	281	274	303	339	368	298	290	284
23	284	296	290	307	308	327	322	345	379	357	341	A	302	296	A	A	301	304	289	303	314	359	301	293
24	F 295	F 282	F 291	F 297	F 315	F	372	363	352	313	320	303	324	321	297	301	323	A	337	342	316	316	294	297
25	F 289	F 307	F 318	F 312	296	339	416	411	354	G	315	A	294	291	290	287	302	A 295	282	303	317	313	305	285
26	278	295	F 296	F 316	F 318	F 320	F 322	365	337	339	C	297	319	309	338	319	A	A	320	317	A	305	F 293	F 297
27	F 283	F 290	F 305	F 319	F 367	353	377	363	327	347	331	320	306	A	A	A	287	303	316	344	314	344	325	307
28	F 277	F 297	F 331	F 305	F 331	F 317	F 343	342	366	352	323	297	A	290	272	287	289	295	315	333	311	328	314	297
29	325	V 309	306	296	F 299	309	353	351	356	A	A	A	294	A	290	271	263	294	319	339	360	300	285	296
30	297	310	359	A	292	299	348	379	372	329	319	317	264	296	296	284	303	330	334	356	343	310	J R 315	282
31	F 284	F 285	F 301	F 305	F 302	F 313	324	367	368	349	325	G	303	293	282	289	290	299	330	363	398	330	305	299
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	29	30	31	30	30	25	25	20	26	26	28	28	28	26	29	30	30	31	30	30
MED	F 292	F 296	F 310	F 310	F 321	F 320	348	354	343	339	315	287	294	290	288	288	288	295	315	326	318	305	296	290
U Q	298	F 307	F 323	F 320	F 332	F 339	361	363	361	348	324	303	303	296	297	304	305	310	325	339	336	325	305	297
L Q	F 284	F 291	F 296	F 302	307	F 313	324	342	326	320	298	270	278	281	279	276	280	293	300	307	311	298	289	284

JUL. 2016 M(3000)F2 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L 350	392	391	A	378	421	R 441	A	A	A	371	L 380					
2								L	L	378	397	392	A	404	A	A	A	372	U L 343	L				
3								L 387	L	A	A	A	A	A	A	412	384	381	367					
4								A	U L 405	400	435	A	A	A	A	409	405	A	L					
5								L	L 420	401	407	A 376	A	A	A	A	A	A	A	A				
6								L	407	397	386	A	426	A	A	A	A	366	364					
7								A	A	A	A	A	A	A	A	A	A	A	A					
8								U L 355	A	A	A	A	A	A	A	388	A	A	A	A				
9								U L 364	381	A	A	A	A	A	A	A	A	A	A					
10								A	L 372	A	A	394	413	A	394	A	383	360						
11								U L 357	387		A	A	A	A	A	A	A	391	L					
12								L		L	A	385	A	A	A	A	363	363	347					
13								A	U L 369	U L 391	U L 353	A	A	437	A	U L 423	388	L 339	L 364					
14								L	L 384	A	419	400	A	404	416	353	366	364	361					
15									A	A	A	399	402	A	383	A	A	A	A					
16								L	U L 398	L 387	430	A	425	A	A 396	381	A	A	A					
17							L	L	L 386	405	372	U L 389	R 415	422	428	H 403	A	381	L 357					
18								L		U L 382	U L 384	398	412	377	A 383	A	A	A	A					
19								U L 380	U L 374	394	U L 419	U L 418	L 350	392	A	389	383	A	352	L				
20								A	A	U L 370	A	A	A	A	A	A	A	353	L					
21								L		A	A	A	A	A	400	381	367	351	361					
22							L	L	L 395	403	426	R 441	434	R 398	385	375	379	373	350					
23							L	A	L 394	L 417	A	A	A	A	A	A	A	A	A					
24								U L 398	388	U L 414	415	386	399	A	A	A	A	A	362					
25								L	L 441	353	A	A	A	A	A	A	A	A	A	A				
26								L	L 376	L 397	C	A	A	A	A	396		A	A					
27									U L 372	A	A	G	A 394	A	A	A	376	A	A					
28									378	392	386	A	A	A	416	402	A	A	A					
29								L	U L 389	A	A	A	413	A	A	R 411	L 358	376	351	L				
30								L	L 393	L	A	A	400	A	412	387	397	376	L					
31								L	U L 414	L	U L 404	424	A 411	418	402	A	389	371	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	22	17	14	13	14	9	11	14	13	16	13					
MED								U L 364	L 388	394	406	394	412	404	400	392	383	371	361					
U Q								L 387	L 398	402	419	409	421	430	416	409	388	376	364					
L Q								L 355	L 378	L 384	386	386	400	395	385	381	366	362	350					

JUL. 2016 M(3000)F1 (0.01)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								296	254	282	438	370	490	374	364	334	292	312	250					
2								228	L 306	342	382	482	386	364	358	306	340	318	L 344	296				
3								232	286	A	352	A	342	A	514	340	302	382	276					
4								A	290	296	334	520	E A 402	388	316	320	330	288	288					
5								246	210	G	500	448	354	A 366	396	E A 430	336	288	264	218				
6								238	350	298	342	A	460	412	352	360	G 438	378	320					
7								262	A	280	A	A	A	402	358	E A 464	372	326	306					
8								324	398	A	A	A	A	456	338	330	A	A	A	A				
9								L 374	366	A	A	A	A	A	A	A	A	A	324					
10								252	418	A	314	G 630	438	372	352	400	328	282						
11								272	266		A	A	A 440	370	330	368	A 398	318	274					
12								228		L 316	362	346	358	390	334	340	376	332	276					
13								A 284	314	334	370	382	E A 402	344	354	282	354	316	276					
14								238	240	A	394	466	380	344	334	344	336	342	328					
15									342	300	A 396	646	G	A	362	324	282	264	A					
16								240	280	312	382	450	382	398	430	336	286	A	300					
17							284	236	264	294	330	L 516	422	394	400	324	280	312	262					
18								248		294	298	338	388	382	372	366	352	340	A 346					
19								270	L 290	266	L 326	368	358	394	444	416	346	326	272	236				
20								282	240	L 332	342	E A 474	A	454	394	410	396	288	292					
21								278		280	284	A	356	326	336	352	334	302	264					
22							252	270	250	244	306	452	384	430	414	382	336	360	298					
23							294	284	234	274	314	A	372	370	A	A	E A 386	308	300					
24								252	278	L 326	338	372	324	328	390	360	E A 350	A	270					
25								202	256	G	342	A	382	362	340	338	304	E A 392	332	268				
26								238	290	288	C	380	326	326	298	324		A	288					
27									312	286	306	348	356	A	A	A	324	308	268					
28									252	276	338	386	A	396	426	340	332	322	270					
29								244	272	A	A	A	404	A	352	366	400	316	268	224				
30								226	234	312	A 338	336	468	330	314	348	300	266	254					
31								238	232	L 276	L 336	G	386	386	398	348	338	318	258					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	27	27	24	25	21	26	26	28	28	28	26	28	5				
MED							284	248	278	295	338	U 417	384	378	358	343	336	316	276	236				
U Q							294	278	312	321	376	499	422	396	397	367	363	332	303	282				
L Q							252	238	250	280	320	369	358	362	337	332	314	302	268	221				

JUL. 2016 h'F2 (KM)

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IONOSPHERIC DATA STATION Okinawa

JUL. 2016 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	246	292	252	Q 310	256	264	228	A 238	196	E A 238	A	232	202	188	A	A	A	202	218	236	234	218	252	262
2	Q 310	260	266	Q 288	248	254	A 250	204	208	A 230	198	216	A	202	A	A	A	192	226	242	238	246	272	280
3	270	268	262	256	218	232	218	222	E A 258	A	E A 278	A	A	A	A	196	202	206	220	202	228	242	288	Q 338
4	Q 300	A 348	Q 238	274	Q 262	228	A 244	A	206	202	200	E A 332	A	A	A	218	210	A	A	270	226	192	A	300
5	A 298	A 284	250	A 216	A 240	236	226	220	A 202	186	206	E A 254	A	A	A	A	A	A	A	A	216	A 256	A 294	304
6	274	280	260	Q 266	Q 260	214	198	204	200	A 226	224	A	202	A	A	A	A	A 216	206	254	220	192	284	A
7	316	Q 294	Q 250	250	Q 260	Q 242	230	A	A	A	A	A	A	A	A	A	A	A	A	230	236	264	298	300
8	Q 344	276	A	A 280	A 320	Q 266	224	238	A	A	A	A	A	A	A	220	A	A	A	A	E A 322	E A 366	294	292
9	Q 274	298	Q 238	Q 254	Q 254	196	222	222	220	A	A	A	A	A	A	A	A	A	A	E A 306	252	236	A 280	282
10	272	Q 358	Q 254	238	242	Q 272	230	A	220	A	E A 246	204	220	A	210	A	210	248	282	282	250	264	276	248
11	266	252	Q 262	256	254	252	234	204	204	218	A	A	A	A	A	A	A	214	A	248	242	240	272	272
12	Q 304	Q 312	Q 260	242	244	258	220	208	234	180	E A 330	236	A	A	E A 276	A	216	204	218	248	244	250	238	312
13	Q 288	270	294	246	220	196	220	A	E A 258	184	216	E A 370	A	198	A	186	220	242	238	242	236	A 240	292	310
14	272	278	Q 288	256	232	262	222	230	196	A	176	222	E A 300	214	220	268	232	240	238	250	246	246	270	272
15	292	270	280	248	220	256	224	218	A	A	A	A 234	230	A	A 250	A	A	A	A	E A 270	280	A 292	A 308	A 294
16	E A 278	A 316	266	248	A 252	260	210	218	192	196	186	A	186	E A 252	A 234	236	A	A	A	E A 312	264	A 278	294	270
17	280	296	Q 258	Q 234	Q 266	258	238	A	186	180	E A 254	172	200	192	198	H 186	E A 266	200	218	220	220	252	252	258
18	272	278	250	234	238	232	234	218	254	228	214	204	210	250	A 246	A	A	A	A	A 304	208	A 246	E A 274	288
19	306	262	242	224	216	244	244	210	186	210	170	180	280	224	A	210	208	A	A	216	214	A 252	E A 304	Q 306
20	310	300	244	222	204	248	234	A	A	220	A	A	A	A	A	A	A	A 234	A	246	206	218	216	A 294
21	288	274	270	Q 280	270	E A 308	E A 278	222	230	A	A	A	A	A	216	198	216	208	218	250	254	248	258	242
22	274	256	228	264	262	248	228	208	192	182	194	186	164	210	220	238	216	208	224	230	198	A 228	268	292
23	290	274	282	280	258	242	248	A	206	198	A	A	A	A	A	A	A	A	A	276	264	212	230	260
24	Q 282	E A 342	A 334	292	250	Q 316	222	216	230	188	194	A 234	A 232	A	A	A	A	A	244	232	240	250	E A 302	284
25	304	Q 284	264	270	274	226	196	184	192	206	A	A	A	A	A	A	A	A	A	A	A 262	268	216	312
26	296	278	266	238	250	Q 252	236	210	216	194	C	A	A	A	A	212	A	A	A	286	A	254	E A 290	300
27	A 322	274	E A 302	244	214	194	208	226	202	A	A	208	E A 254	A	A	A	244	A	A	226	A 246	E A 270	E A 262	262
28	Q 310	E A 320	246	Q 246	Q 248	Q 262	228	208	204	208	214	A	A	A	210	202	A	A	A	228	228	208	E A 308	A 280
29	252	238	258	290	268	296	226	206	220	A	A	A	212	A	A	212	212	210	222	218	194	232	290	280
30	282	258	214	A	316	312	258	222	200	218	A	A	A 220	A	172	208	214	208	220	218	206	228	252	A 316
31	324	Q 332	Q 286	Q 264	Q 282	Q 268	E A 266	212	200	186	198	H 176	E A 238	206	A 228	A	228	246	A	228	188	202	E A 306	Q 276
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	31	31	24	27	21	17	16	15	10	12	14	14	16	14	28	30	31	30	30
MED	288	278	260	255	252	252	227	217	203	200	200	212	211	206	219	211	216	209	221	239	236	244	274	286
U Q	306	300	270	274	262	264	238	222	220	219	E A 235	E A 235	E A 238	224	A 240	220	228	237	238	270	250	A 256	A 294	300
L Q	274	270	250	242	238	232	222	208	196	186	194	195	202	198	210	198	210	205	218	228	216	228	258	272

JUL. 2016 h'F (KM)

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	106	106	A	A	A	A	110	110	108	108	110	114	A				
2							A	A	A	A	A	110	110	110	108	A	118	114	114	A				
3							A	A	108	A	108	108	A	A	A	A	110	108	108	A				
4							A	106	108	106	106	A	A	A	A	A	A	114	A	A				
5							A	124	116	A	A	A	110	114	112	110	106	104	106	A				
6							A	108	108	108	A	A	A	A	A	A	A	A	110	A				
7							A	110	108	106	106	110	106	110	110	108	108	108	110	A				
8							128	114	110	106	106	A	A	110	110	110	108	108	108	A				
9							126	108	110	112	118	108	108	108	106	A	A	A	A	A				
10							A	108	108	108	A	A	A	A	110	110	110	110	114	A				
11							140	112	106	106	106	A	A	A	A	A	A	A	A	A				
12							A	114	A	A	A	A	A	A	A	A	106	118	114	A				
13							A	112	112	A	A	108	108	108	108	108	110	A	A	A				
14							A	110	A	A	A	A	A	A	A	110	A	A	A	A				
15							A	114	A	A	A	A	110	110	110	110	108	108	A	A				
16							A	A	A	A	A	A	A	A	A	108	108	106	106	A				
17							A	A	108	A	A	A	A	A	A	A	A	108	A	A				
18							A	A	A	A	108	A	108	A	108	110	110	110	A	A				
19							A	110	A	A	A	A	A	A	A	A	A	114	112	A				
20							A	108	106	108	A	A	A	A	A	A	A	A	A	A				
21							A	A	108	108	108	A	108	108	A	108	108	A	A	A				
22							124	118	A	A	A	A	110	110	114	120	120	A	A	A				
23							A	A	A	110	110	B	A	A	A	A	A	A	A	A				
24							A	A	110	110	110	112	112	112	112	112	110	110	A	A				
25							A	A	A	108	108	114	114	112	108	114	A	A	A	A				
26							A	A	112	110	C	110	110	108	108	110		A	A	A				
27							A	116	114	A	A	110	110	108	A	108	108	108	A	A				
28							A	114	112	110	108	108	108	108	108	108	106	106	106	A				
29							B	112	112	108	108	A	A	A	A	A	A	110	114	B				
30							A	112	A	110	110	108	112	110	110	A	110	110	110	A				
31							A	A	A	A	A	A	A	110	A	108	108	108	110	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	20	19	16	14	11	15	17	16	18	19	20	15					
MED							127	112	108	108	108	110	110	110	110	110	108	109	110					
U Q							134	114	112	110	110	110	110	110	110	110	110	110	114					
L Q							125	108	108	107	106	108	108	108	108	108	108	108	108					

JUL. 2016 h'E (KM)

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	106	110	110	106	102	124	120	144	102	102	104	106	142	120	114	118	126	116	118	94	114	114	108
2	108	108	106	106	120	102	102	104	104	104	110	132	116	G	116	116	118	120	110	106	106	106	106	114
3	120	102	102	102	104	102	116	114	110	106	108	104	104	104	104	110	116	116	114	112	92	92	92	106
4	104	106	106	102	102	106	120	110	106	114	114	106	102	100	102	126	104	110	98	104	104	92	108	108
5	106	102	102	102	98	102	128	120	120	114	126	124	120	116	126	112	114	110	106	98	104	92	92	126
6	92	92	92	114	106	122	132	122	116	114	106	102	102	116	98	126	118	120	114	106	106	122	130	106
7	112	106	102	102	102	90	124	118	110	110	106	108	106	118	144	130	118	116	112	110	108	110	122	94
8	106	112	106	106	120	106	124	128	114	110	114	112	108	114	110	146	116	110	108	102	102	96	92	94
9	96	94	B	104	96	102	132	118	122	116	112	112	106	104	112	100	100	100	100	96	92	94	108	108
10	90	106	110	100	100	100	122	120	120	110	110	110	112	108	154	116	124	114	112	104	104	96	96	92
11	92	92	92	94	94	B	146	124	116	114	106	104	102	102	100	100	98	100	110	96	92	92	118	108
12	108	108	104	128	102	102	102	102	100	102	102	102	98	98	102	102	142	124	120	106	106	106	102	102
13	102	112	92	116	112	108	126	122	112	106	106	114	110	110	106	142	124	140	102	108	96	116	92	92
14	104	100	114	110	102	98	126	120	98	98	100	102	102	160	144	138	136	96	96	108	106	106	92	92
15	102	104	100	100	92	102	160	128	114	114	116	118	144	134	120	120	116	114	108	104	124	106	104	106
16	104	100	100	100	102	104	104	104	104	104	104	104	104	104	110	128	110	110	108	108	108	104	108	112
17	106	106	102	102	114	102	100	98	100	100	100	100	100	100	100	100	100	118	106	130	102	102	B	B
18	90	90	90	90	106	98	106	106	106	110	120	126	106	146	110	130	116	114	106	100	100	98	96	96
19	94	94	90	102	102	102	198	G	104	150	104	104	110	106	102	106	112	114	114	96	106	104	104	118
20	118	102	102	102	102	90	120	112	110	108	104	102	102	104	102	102	102	102	110	96	96	94	94	104
21	94	B	104	102	102	102	102	118	110	110	110	102	104	104	104	110	G	104	98	98	94	94	92	90
22	90	90	88	B	102	106	G	112	104	102	102	102	G	156	160	188	100	96	96	96	92	92	96	B
23	B	106	106	106	106	122	114	106	112	106	106	106	104	102	104	100	100	98	112	106	106	104	94	94
24	110	106	108	108	106	102	102	102	126	160	136	122	120	120	120	118	110	110	110	110	102	112	98	92
25	94	92	100	96	96	B	100	102	104	114	114	112	118	114	114	124	98	98	96	114	110	106	94	108
26	106	102	102	102	102	100	100	132	120	G	C	120	126	122	118	124	98	98	98	106	92	112	110	106
27	108	108	104	104	102	106	132	126	126	122	114	120	128	116	112	108	114	108	96	94	108	108	128	108
28	124	104	104	104	102	102	102	102	126	118	126	114	114	114	130	114	114	112	110	98	96	96	98	102
29	102	96	106	108	108	100	G	142	124	116	112	110	112	102	102	104	120	112	112	B	B	B	96	96
30	92	B	104	102	104	102	102	116	102	116	112	110	112	110	G	104	98	100	96	96	96	90	90	106
31	106	106	106	B	106	120	100	100	100	98	98	98	98	128	118	116	120	122	112	106	92	96	110	120
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	30	29	31	29	29	30	31	30	30	31	30	30	30	31	30	31	31	30	30	30	30	29
MED	104	104	103	102	102	102	120	117	110	110	109	108	106	112	111	116	114	110	108	105	102	103	98	106
U Q	108	106	106	107	106	106	127	122	120	114	114	114	114	120	120	126	118	116	112	108	106	106	108	108
L Q	94	95	100	102	102	101	102	104	104	104	104	102	102	104	102	104	100	100	98	98	94	94	94	94

IONOSPHERIC DATA STATION Okinawa

JUL. 2016 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

LAT.26°41.0'N LON.128°09.0'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F2	F1	F2	F2	F1	C2	C2	H1	C2	L2	LC11	LH11	HL11	C1	C2	C1	CL11	CL11	C2	FQ21	FF21	F3	F4
2	FQ21	F3	FQ31	FQ21	FF13	F3	L5	LHQ11	LHQ11	LH21	CH11	H1	C2		C1	CL11	CL11	CL11	CL11	C1	FF33	FF33	F3	FF14
3	FF11	F1	FF21	F1	F2	FQ31	CLQ11	CQ11	CQ21	C3	C2	L2	L2	L3	L1	C1	C1	C1	CL11	CL21	F3	F3	F6	FQ31
4	F5	FQ71	FQ21	FQ41	FQ31	F3	CH21	C4	C2	CH11	C1	C1	L2	L2	LCH21	CL11	LC11	CL21	LC32	L6	FF63	F3	F9	FF21
5	F5	F6	F2	FQ41	F2	F2	CL22	CL11	CL11	CL21	CL11	CL11	C1	C1	C1	C2	C1	C2	C4	L4	F3	F3	F6	FF13
6	F4	F2	FQ21	FF22	F2	F1	H1	C1	C2	C1	CH11	L3	LC11	CL31	LC31	CL42	CL21	CL11	C1	C5	F8	FFF12	FFF12	F7
7	FFQ22	F6	FQ21	FQ21	F3	F1	C5	C3	C3	C3	C3	C3	C2	CQ11	H1	C2	C2	C1	CL41	C3	FF43	FQ51	FF22	F1
8	FQ21	FFQ23	F7	FQ41	FFQ14	F3	C4	CL21	C2	C2	C1	C2	C3	C1	C1	HL11	C2	C7	C9	L9	F9	F9	F5	F4
9	FQ11	F2		FQ21	FQ21	F1	H2	C2	C1	CL11	CL21	CL21	C3	C3	CL24	L4	LQ41	LQ61	LQ51	L7	F7	F5	F7	FF11
10	F2	F4	FF23	FQ41	FQ61	FQ31	C5	C3	C2	C3	C1	C1	C1	C1	H1	C1	C1	C1	CL21	L3	L3	F3	F6	F7
11	F4	F2	FQ21	F1	F1		H1	CL11	C2	C2	C3	L2	LQ21	LQ21	LQ31	LQ21	LQ41	L4	CL32	L4	FQ31	F3	FF12	FF22
12	FQ31	FQ91	FQ41	FFQ13	FQ31	FQ41	LQ21	LH21	L4	L2	L2	L2	L2	LQ21	LQ21	LQ21	H1	CL11	CL11	C2	F5	F3	F3	FQ41
13	FQ31	FFQ13	FQ31	FF12	FF22	F2	C1	C4	C3	C1	C1	C2	C2	C1	C1	H1	CL21	HCL11	LC31	CLH33	F6	FF16	F6	F7
14	FF52	FQ51	FF12	FF16	F2	F2	C2	C1	L1	L3	L2	L2	L2	HL11	HL12	HL12	HL12	LC31	LQ21	CL33	FF85	FF23	F4	F2
15	FQ21	FQ21	F4	F2	F1	FQ41	H1	C1	C3	CL21	CL21	C1	HC11	H1	C2	C2	C5	C5	CQ61	LQ31	FFQ15	F6	F8	F8
16	F6	FQ31	FQ21	F2	F3	F1	L4	C2	L1	L2	L1	L2	L1	LQ11	C1	C1	C2	C4	C3	CL71	F9	FQ51	FFQ23	FFQ32
17	FFQ22	FFQ33	FFQ22	FQ31	FF13	F2	LQ11	LQ41	LQ11	L1	L2	L1	L1	L1	L1	L1	LC21	C1	C2	HL11	FQ21	FQ11		
18	F2	F1	F1	F2	FF11	FQ21	CL11	C2	C3	C1	C1	CL11	C1	HC11	C1	HL21	CL11	C5	C7	L9	F9	FQ51	FQ61	FQ31
19	F5	F2	F2	F1	FF21	F3	H1		L2	HL11	L1	L1	C1	C1	L2	C1	C1	CL31	C4	L1	FF53	FQ31	FQ21	FFQ22
20	FFF22	F3	F3	FF43	FF11	F1	C4	C7	C4	C2	L2	L4	L3	L1	L2	L1	L4	L2	CL22	LQ41	F9	F6	F7	FF24
21	F2		F1	FQ21	FQ41	F8	L3	CL11	C1	C1	C1	L1	L1	L2	L1	C1		L2	LQ21	LQ41	FQ41	FQ81	F5	F2
22	F4	F2	F1		F1	F1		CL12	L1	L1	L2	L2		H1	HL11	HL11	L1	L1	L1	L2	F3	F3	F1	
23		F4	F3	F3	F2	F2	C2	CQ31	C1	C1	C1	C1	L2	L1	L4	L3	L3	LC21	CL52	CL54	FF58	FF55	F2	F2
24	F2	F8	F8	F6	F8	F6	L2	L2	C2	H1	H1	CL11	C1	C1	C1	C2	C4	C3	C1	CL11	FQ11	FF41	FQ21	FQ21
25	FQ21	FQ21	F2	F1	F1		L1	LQ21	L3	C2	C3	CL31	CL21	C2	C1	CL11	L4	L8	LC61	CL33	FF41	F8	F1	FF33
26	F3	F2	F5	FQ21	F5	F5	L1	HL11	C1			C2	C1	C1	C2	C1	L2	L5	LC71	CL25	F4	FF25	FQ31	FQ71
27	F6	F3	F8	FQ31	F5	F1	H1	CL21	C1	C2	CQ21	C1	C1	C2	CL52	C4	C2	C2	LQ61	L6	FF35	FF86	FF19	FQ51
28	FFQ52	F7	F3	F2	F2	F2	L2	LH11	CL11	CL11	CL11	CL11	C3	C2	H1	C1	C1	C2	C4	LC11	F3	F2	F4	F4
29	F2	F1	F1	F1	F1	F2		H1	CL11	C3	C4	C2	C1	L3	L2	L1	CL11	C1	C1				F1	F1
30	F1		F3	F7	F3	F3	L3	CHL11	LC21	C2	C2	C1	C1	C1		L1	L1	L1	L1	L5	F2	F5	F3	F4
31	FQ51	FQ41	F3		F2	F1	L7	LH31	L3	LH21	L2	L1	L2	CL11	CL11	CL21	CL11	CL11	CL41	C3	F5	F1	FF22	FFF21
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

JUL. 2016 TYPES OF Es

NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

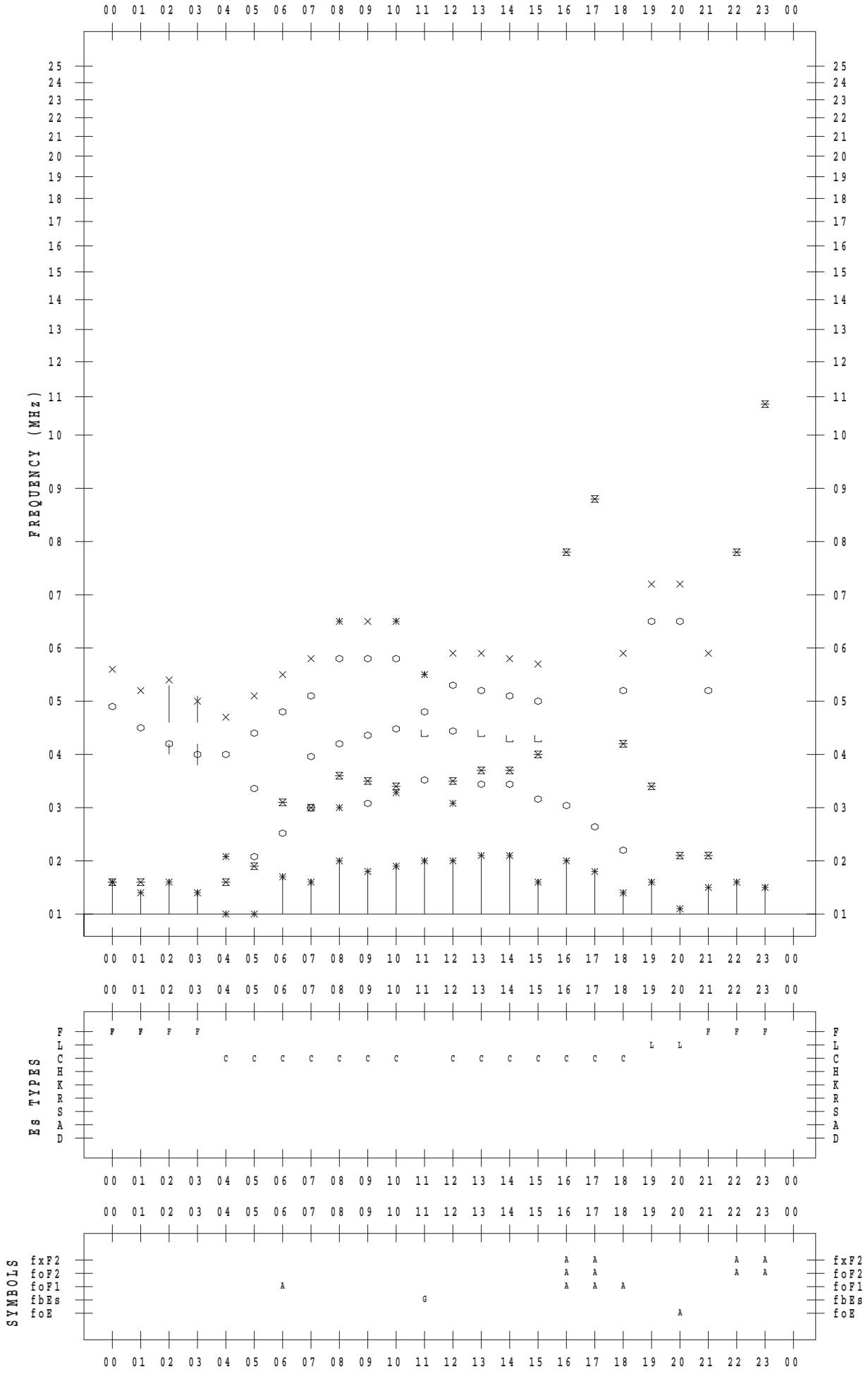
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 1

135 °E MEAN TIME



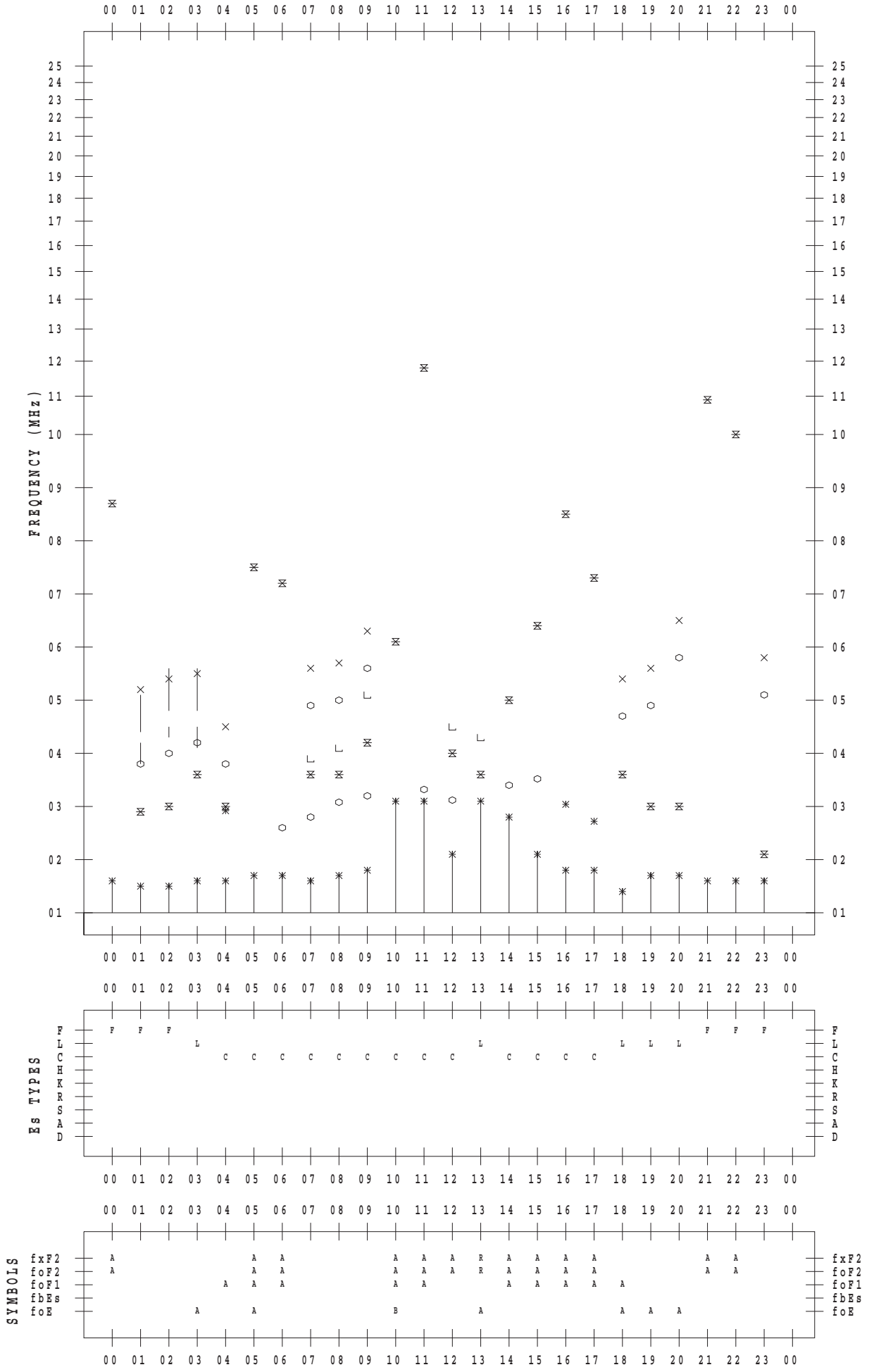
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 2

135 °E MEAN TIME



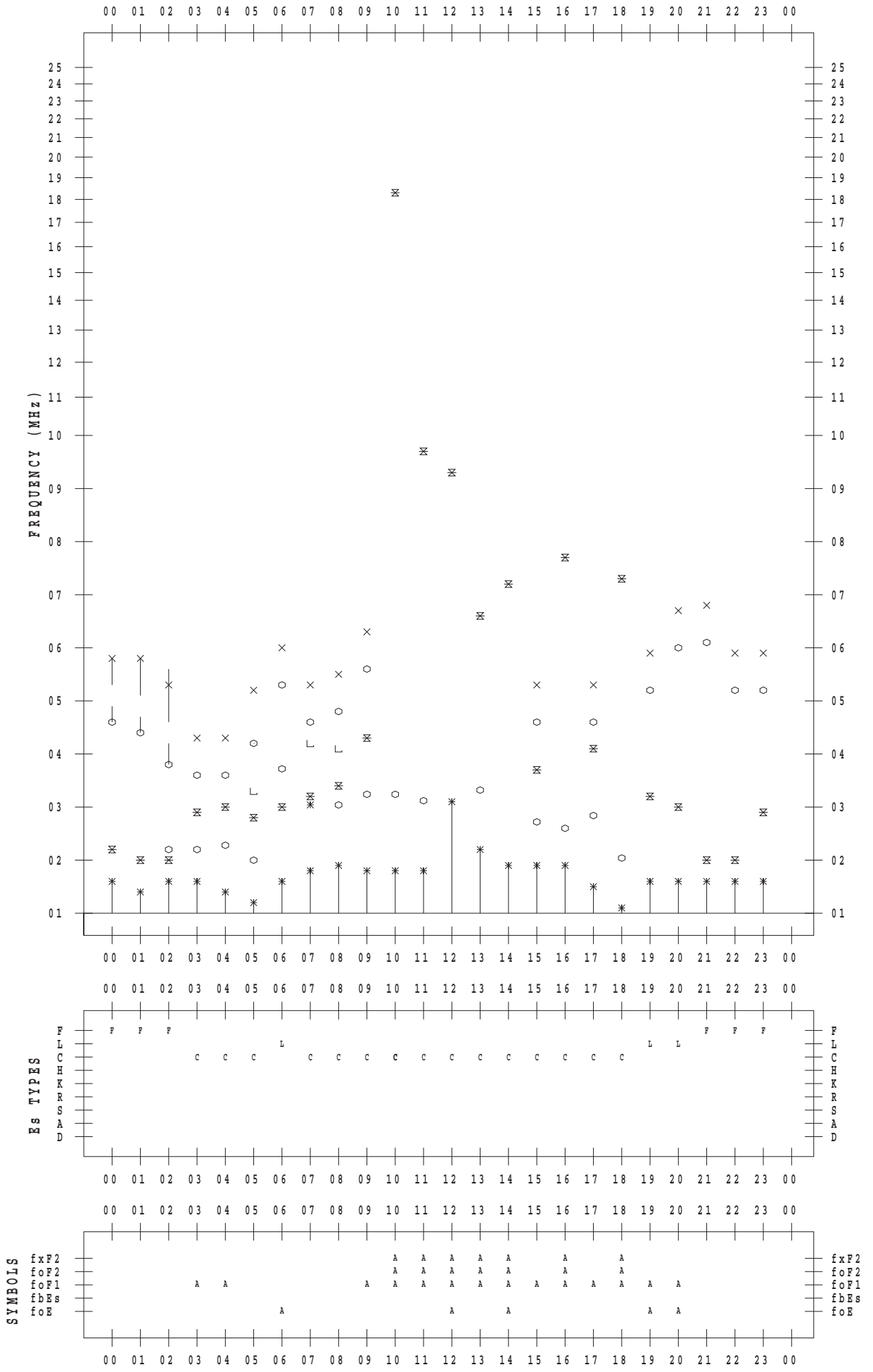
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 3

135 °E MEAN TIME



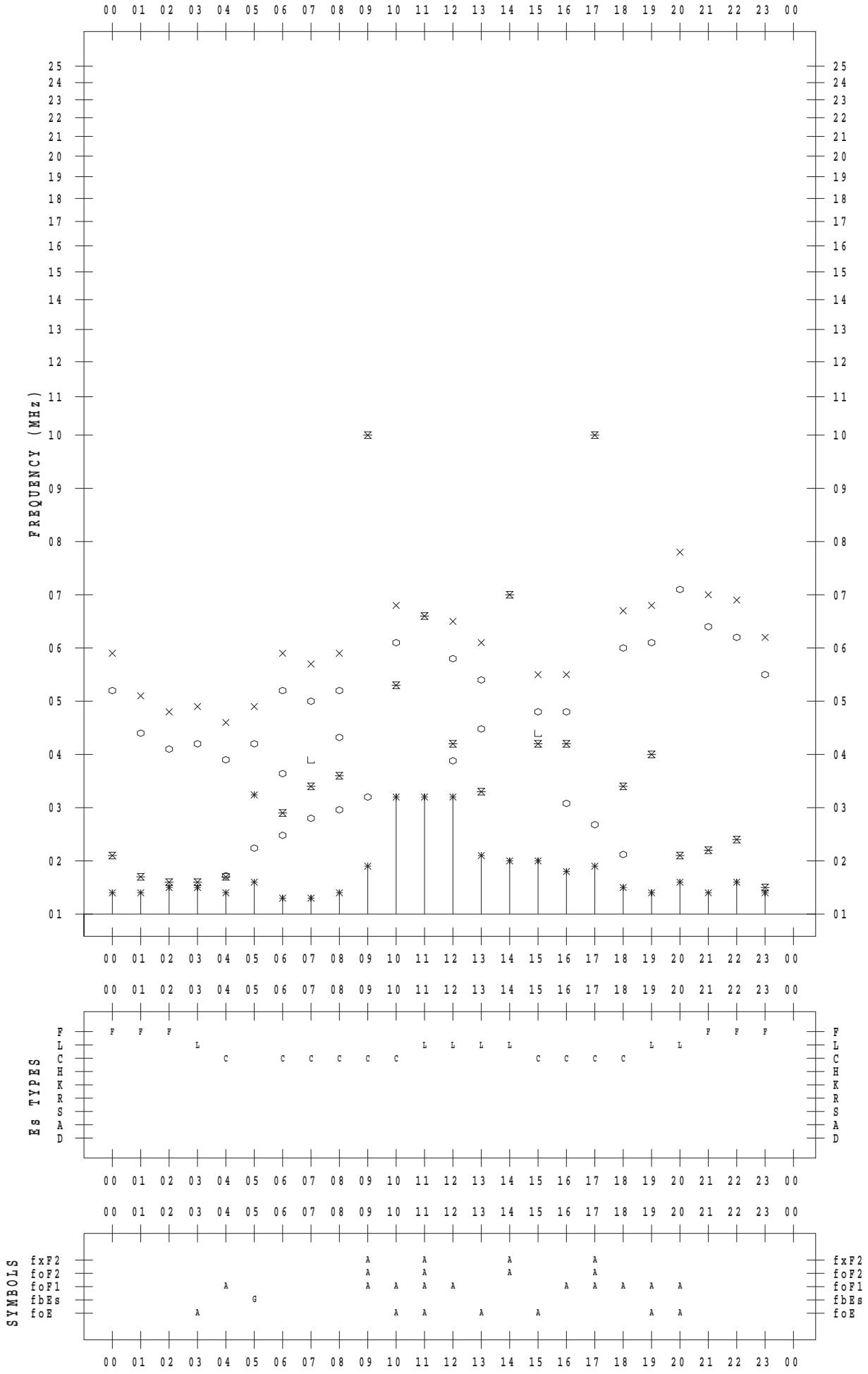
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 4

135 °E MEAN TIME



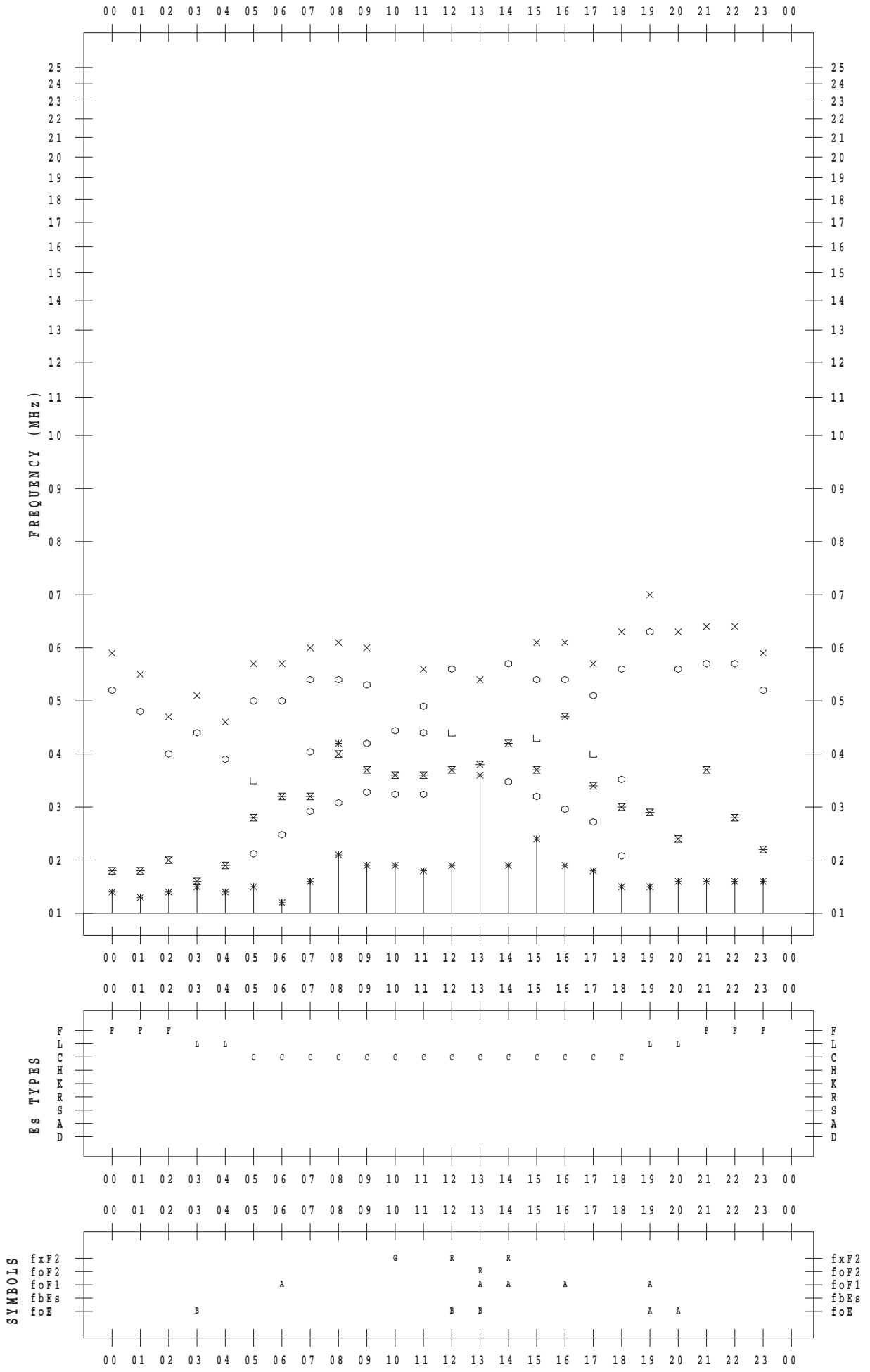
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 5

135 °E MEAN TIME



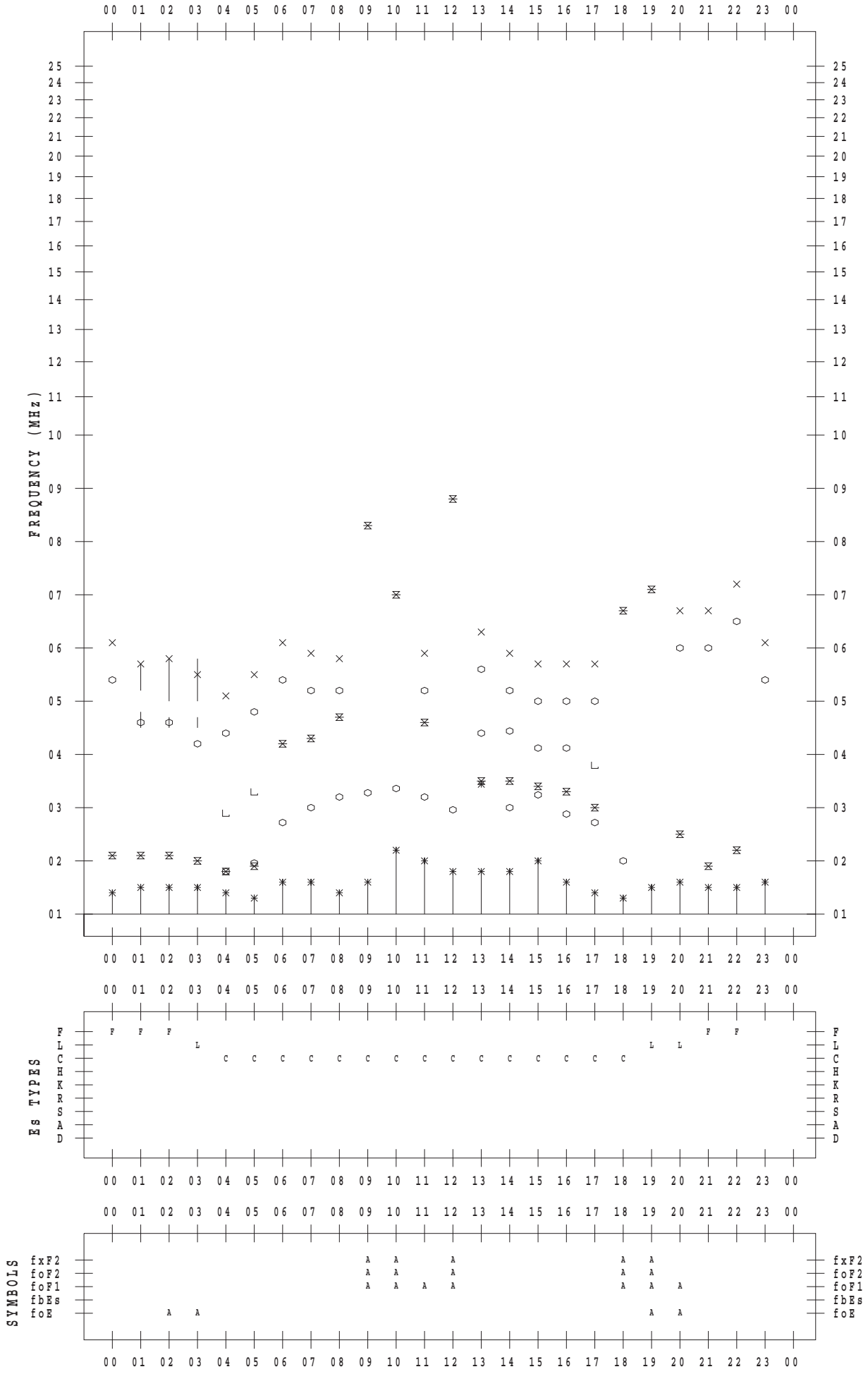
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 6

135 °E MEAN TIME



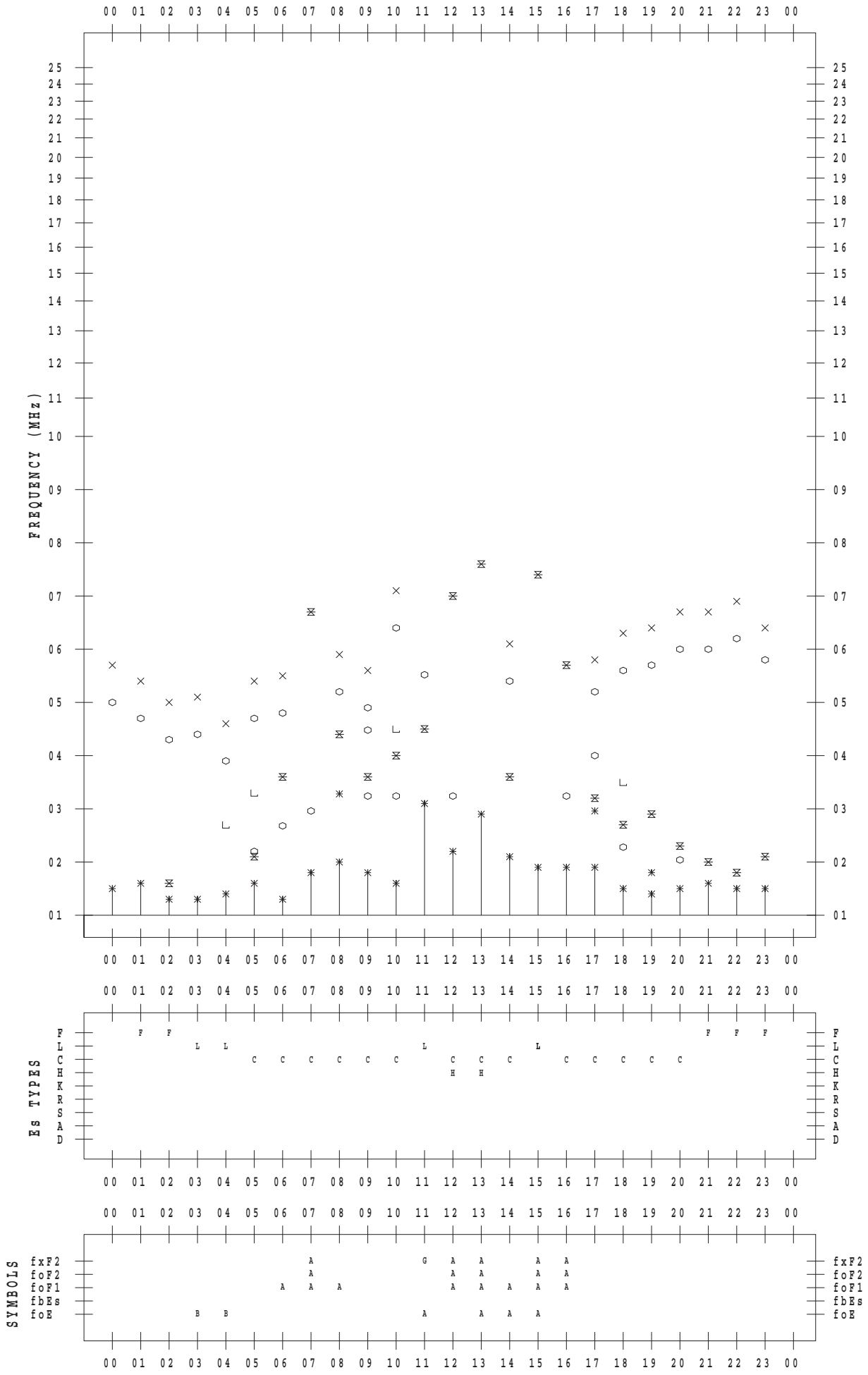
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 7

135 °E MEAN TIME



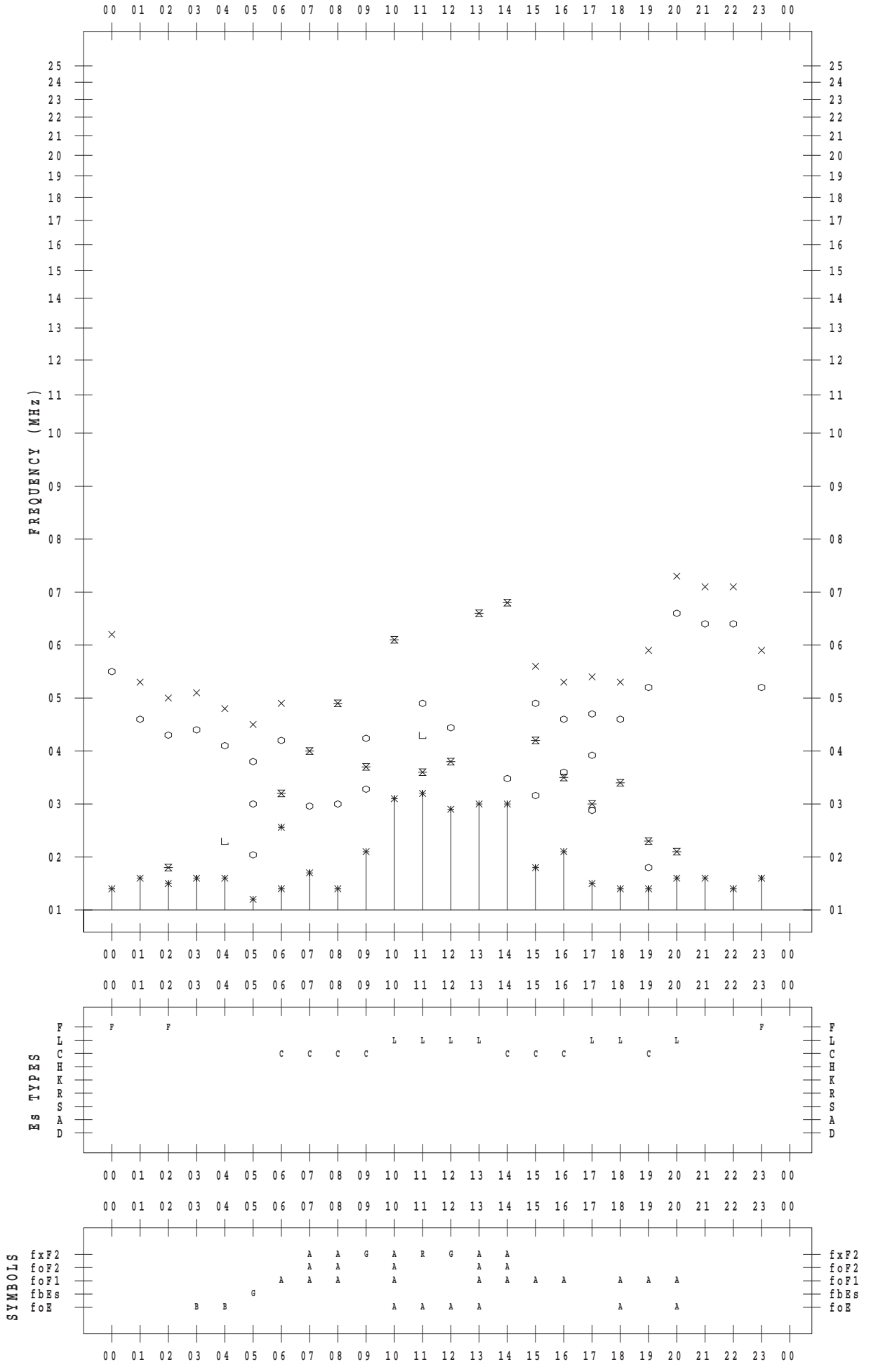
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 8

135 °E MEAN TIME



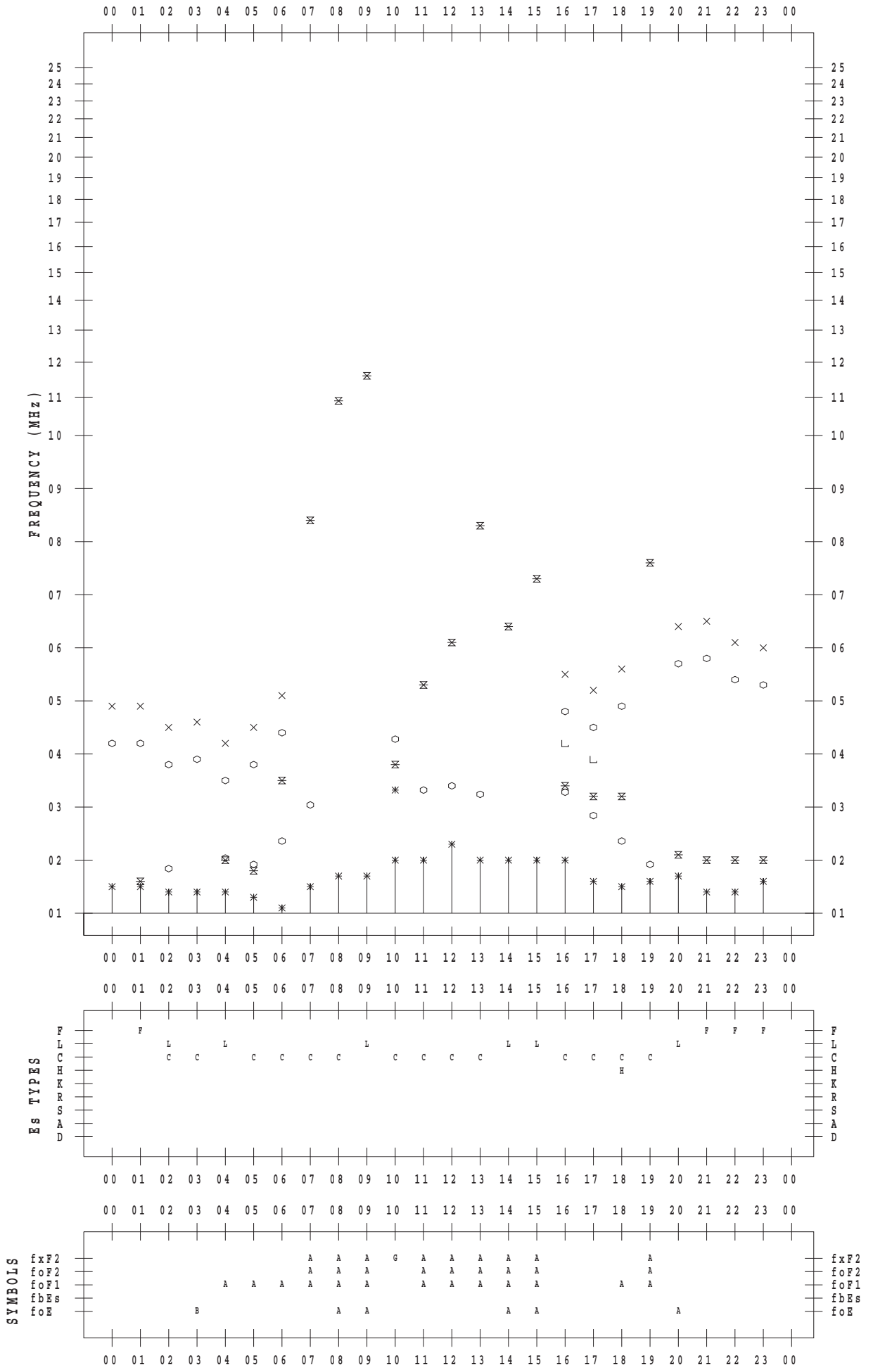
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/ 9

135 °E MEAN TIME



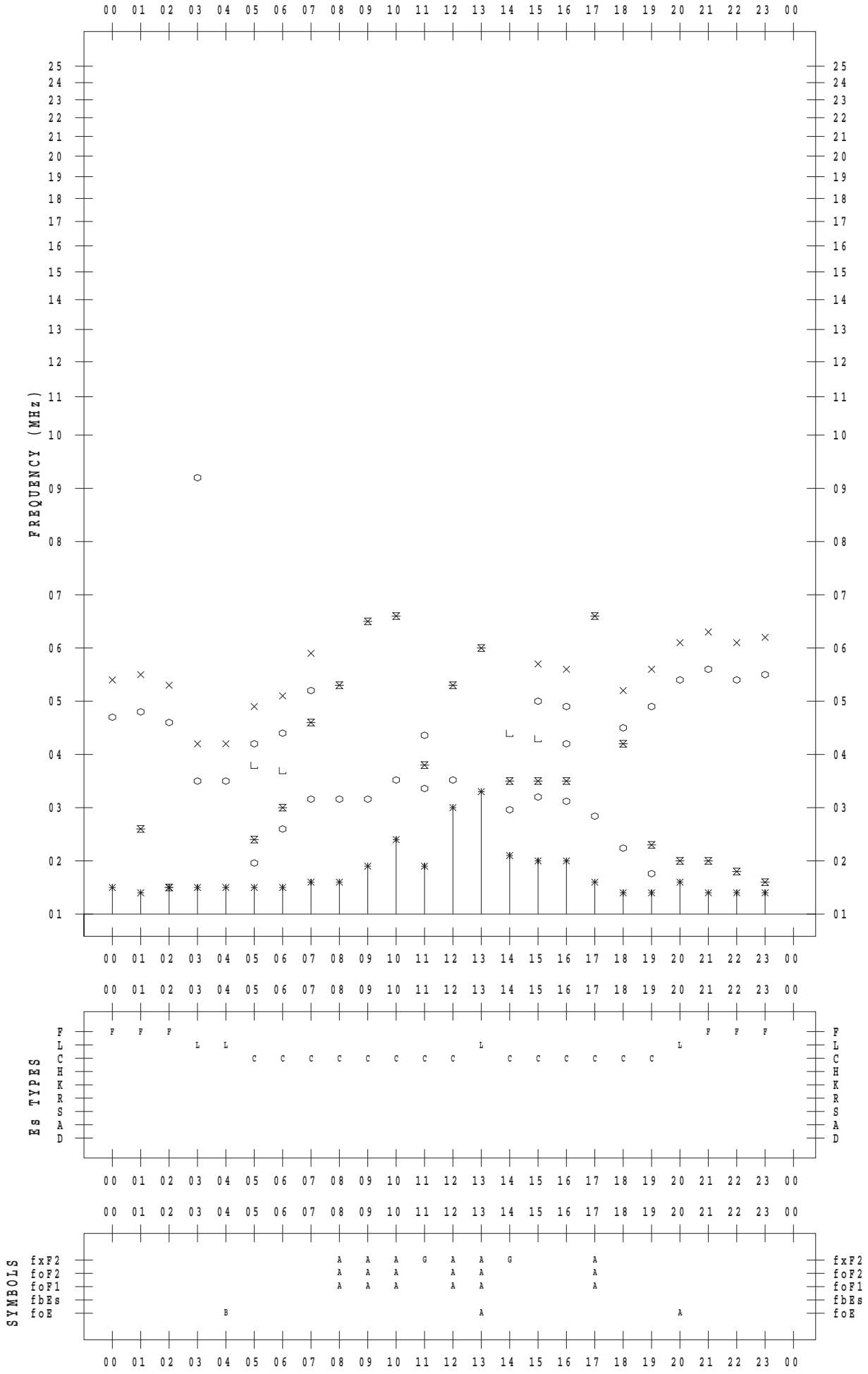
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/10

135 °E MEAN TIME



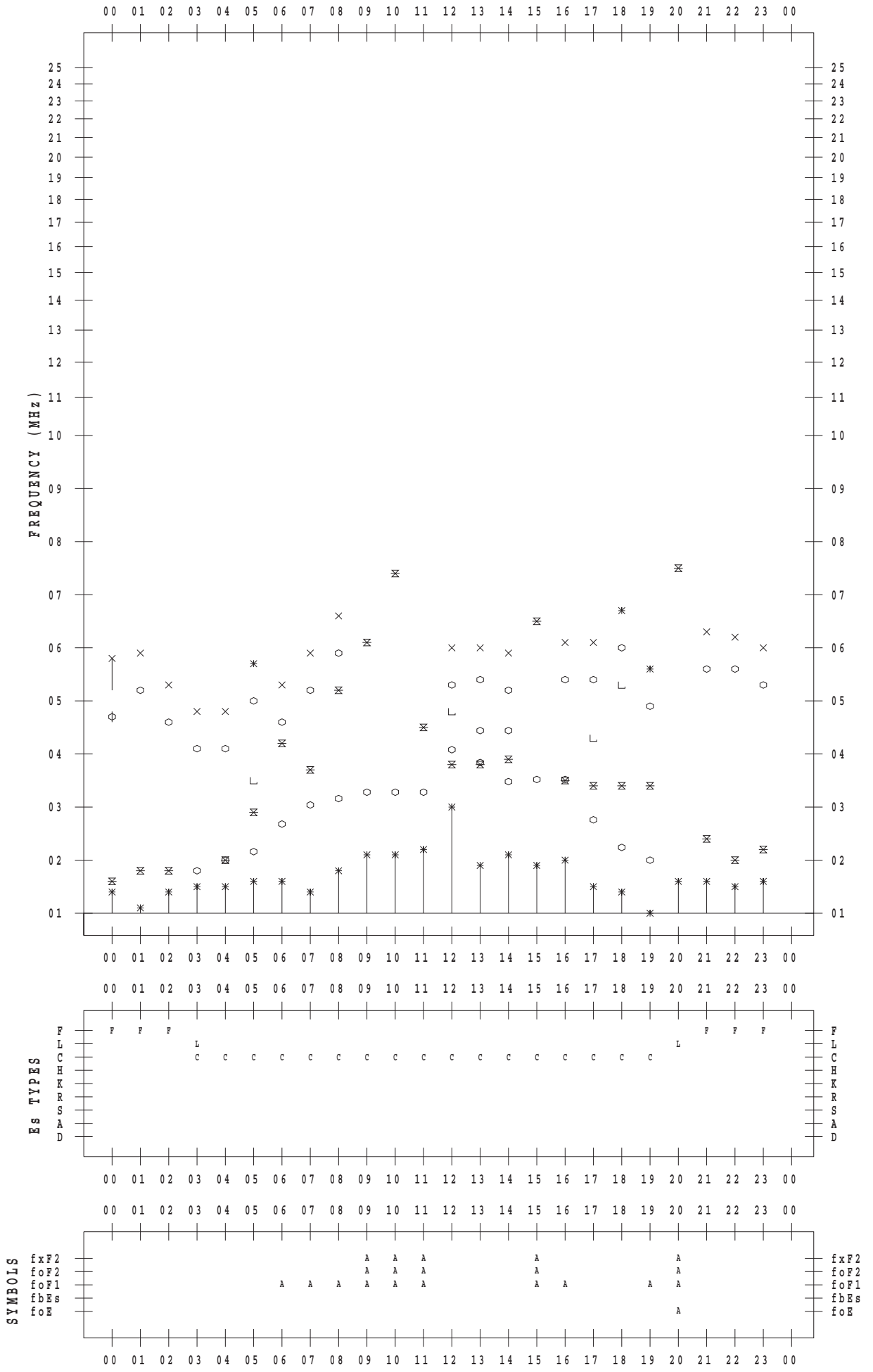
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/11

135 °E MEAN TIME



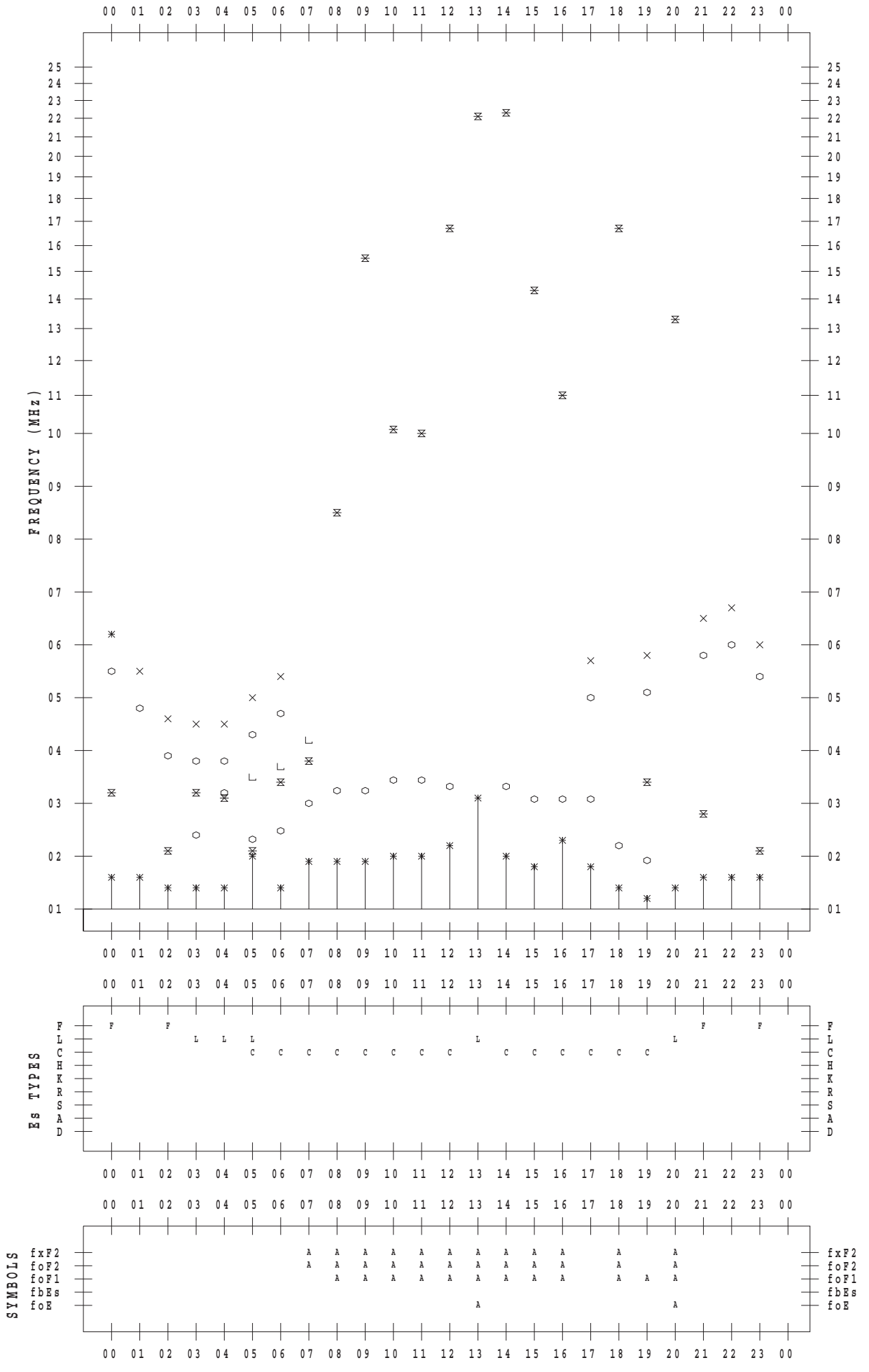
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/12

135 °E MEAN TIME



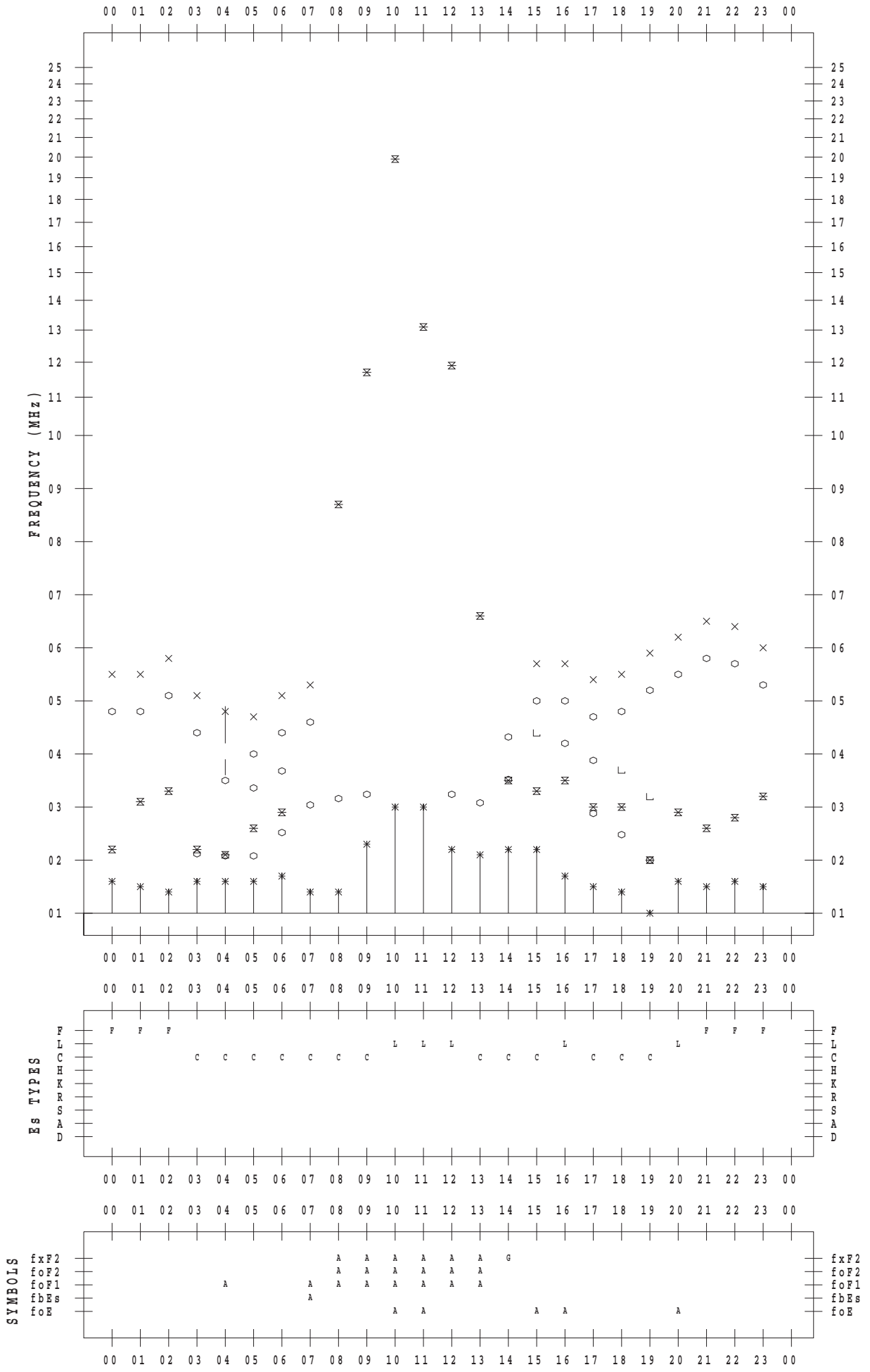
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/13

135 °E MEAN TIME



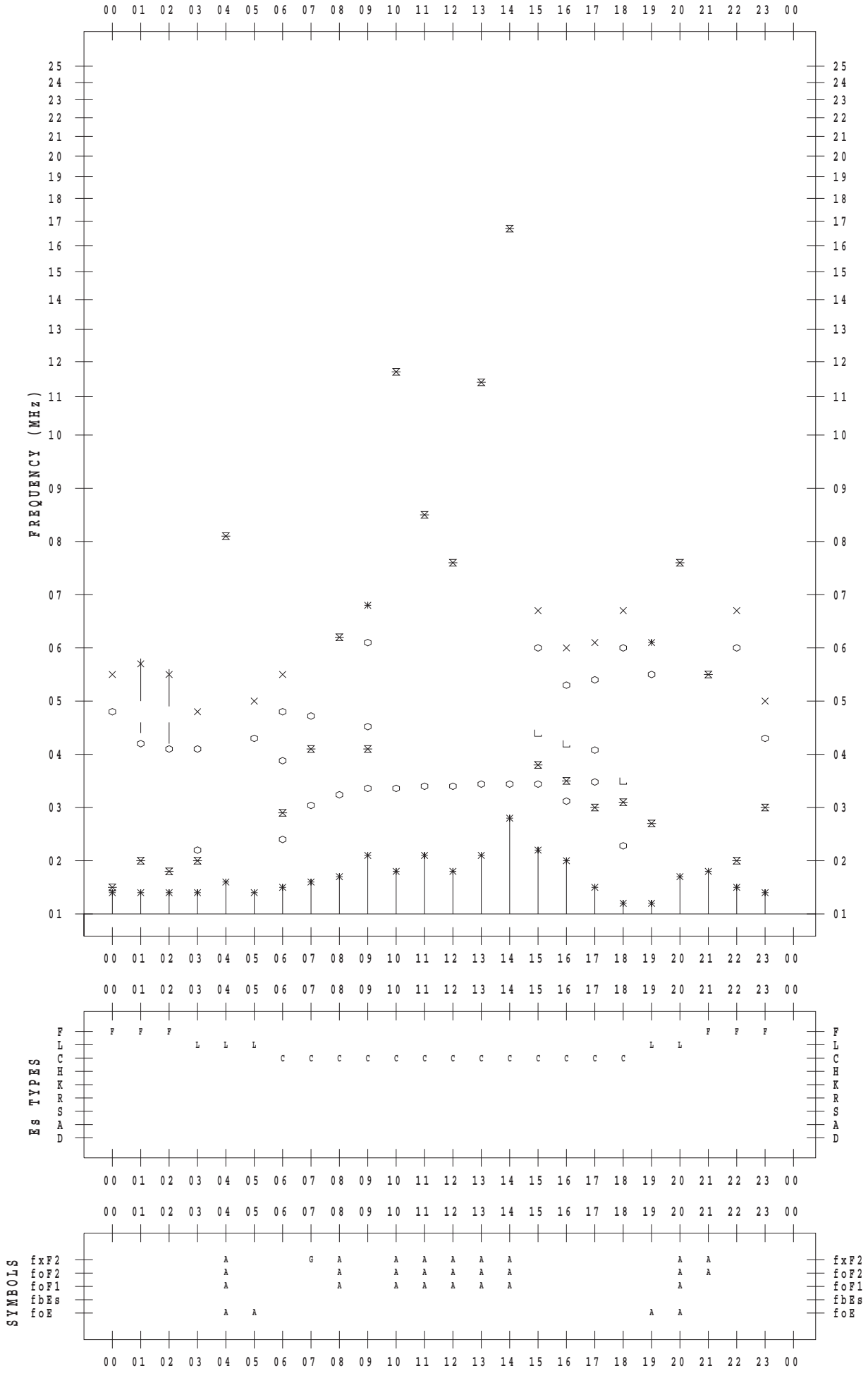
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/14

135 °E MEAN TIME



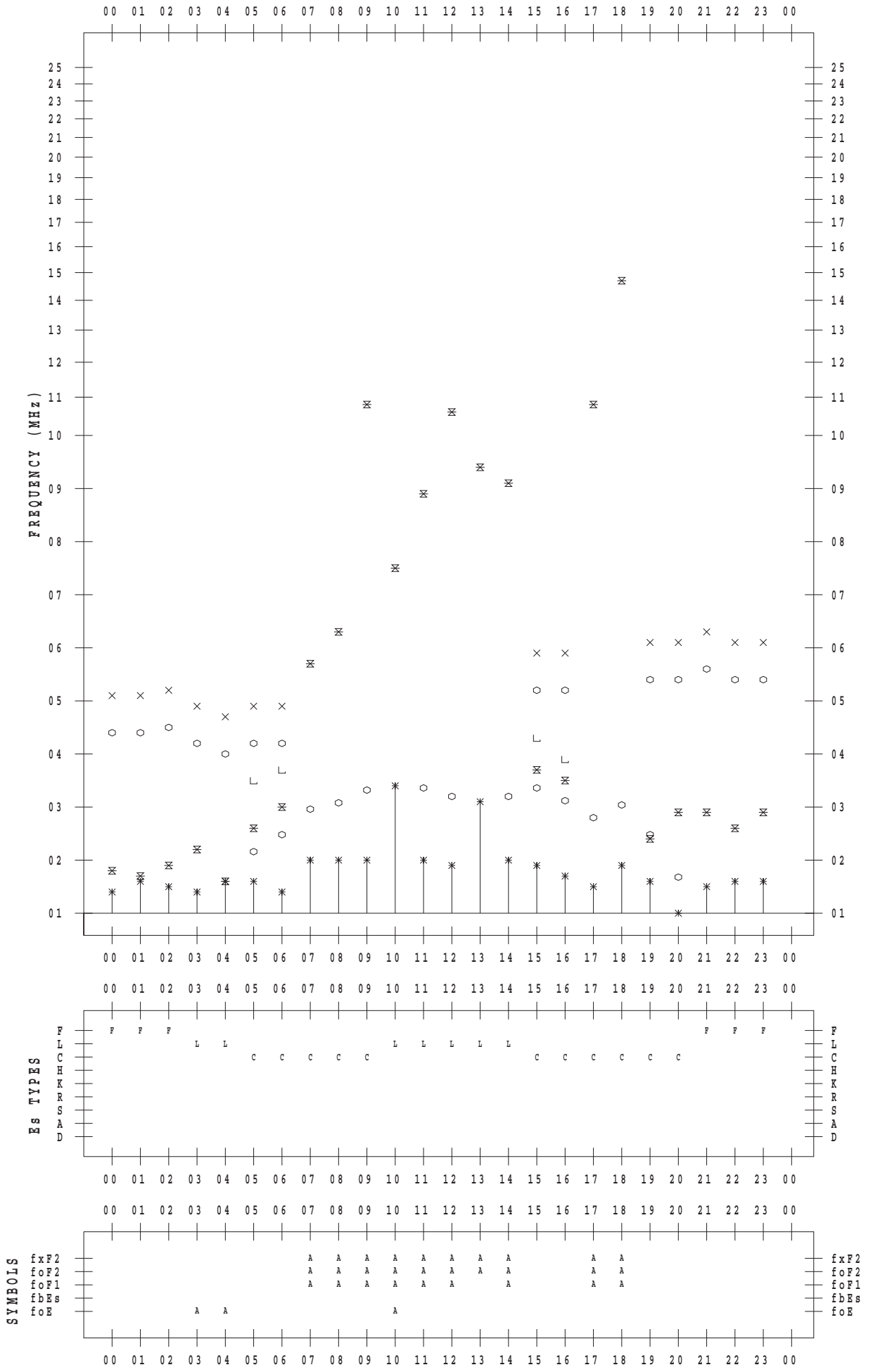
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/15

135 °E MEAN TIME



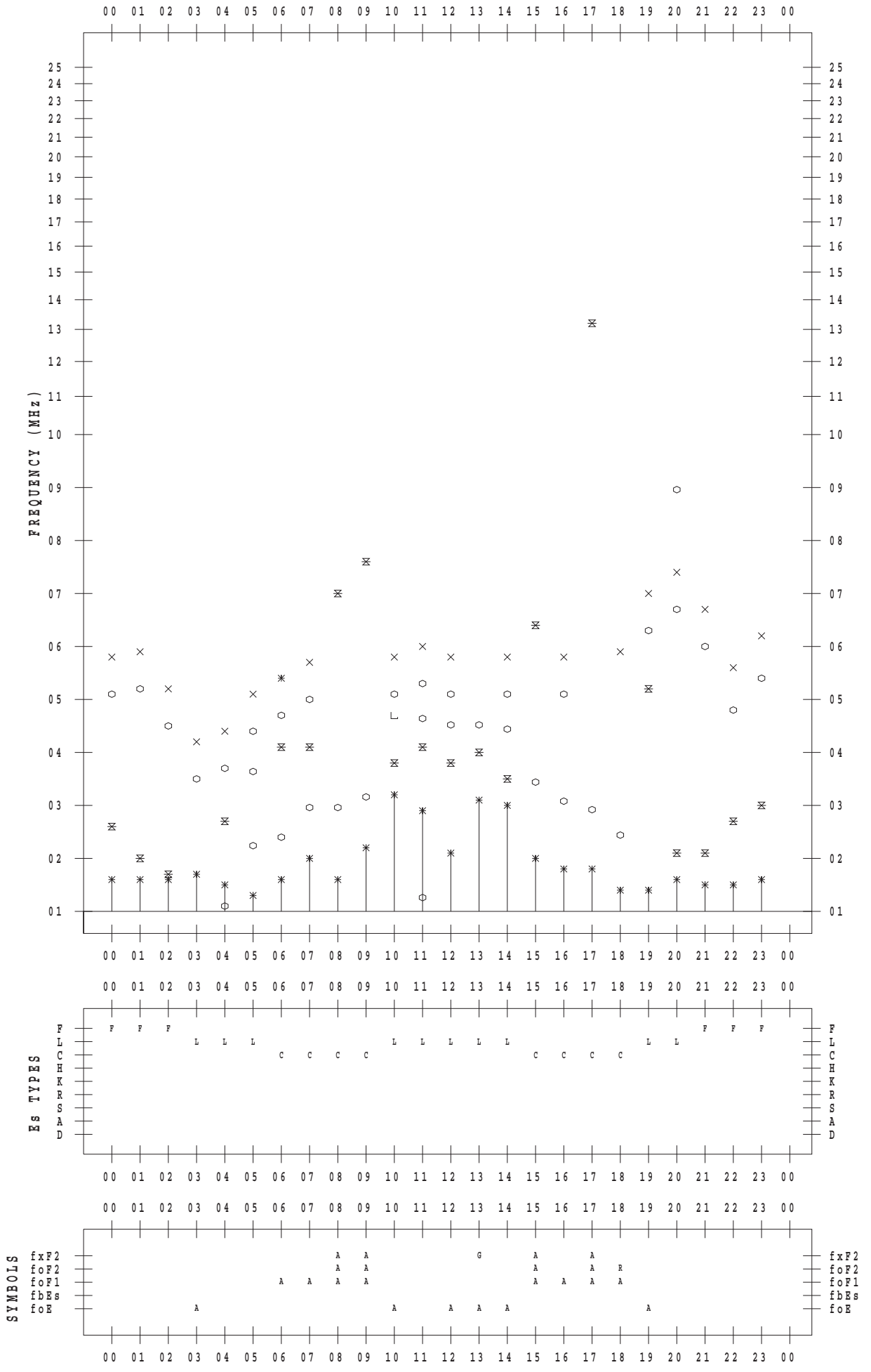
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/16

135 °E MEAN TIME



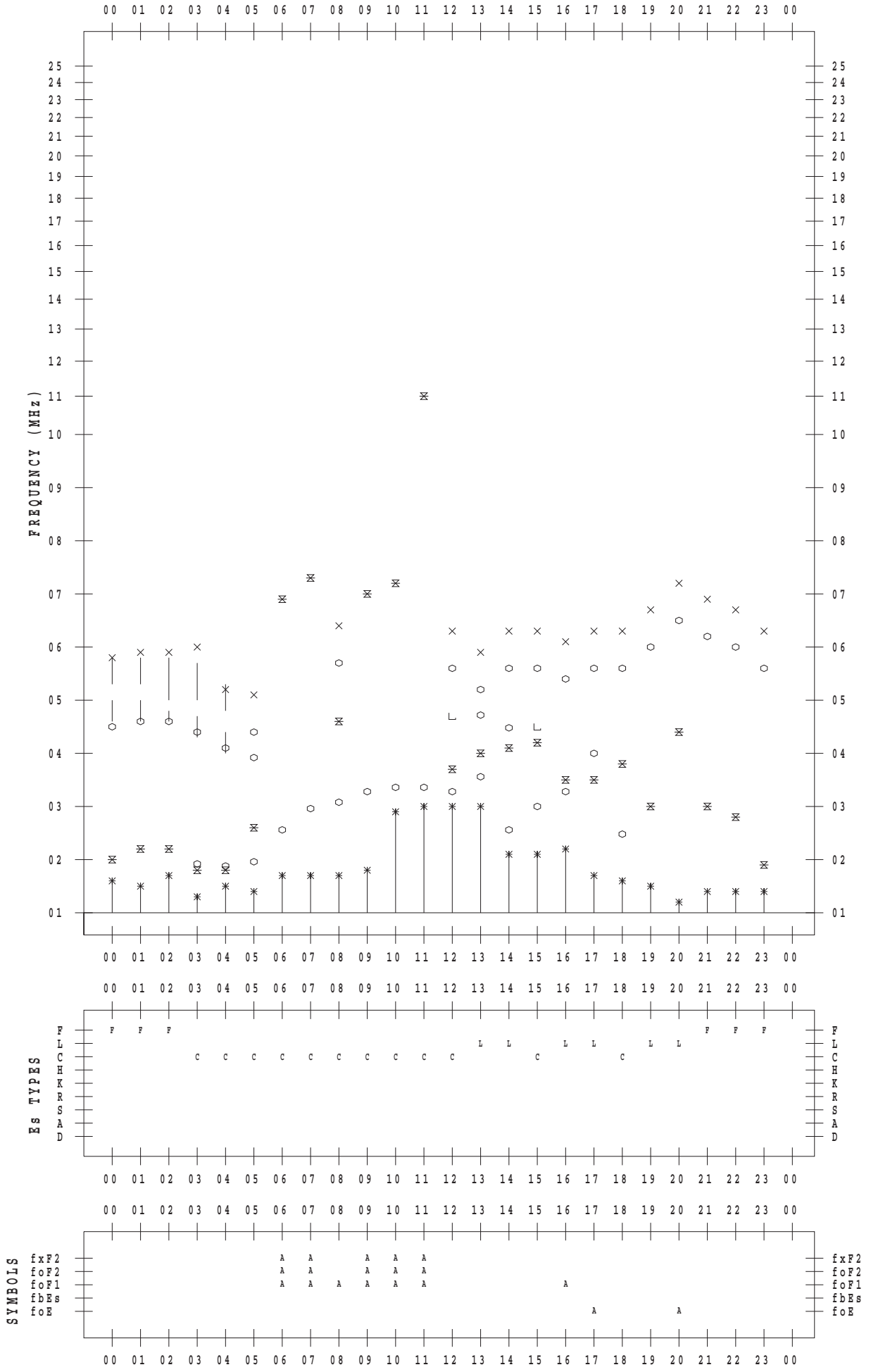
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/17

135 °E MEAN TIME



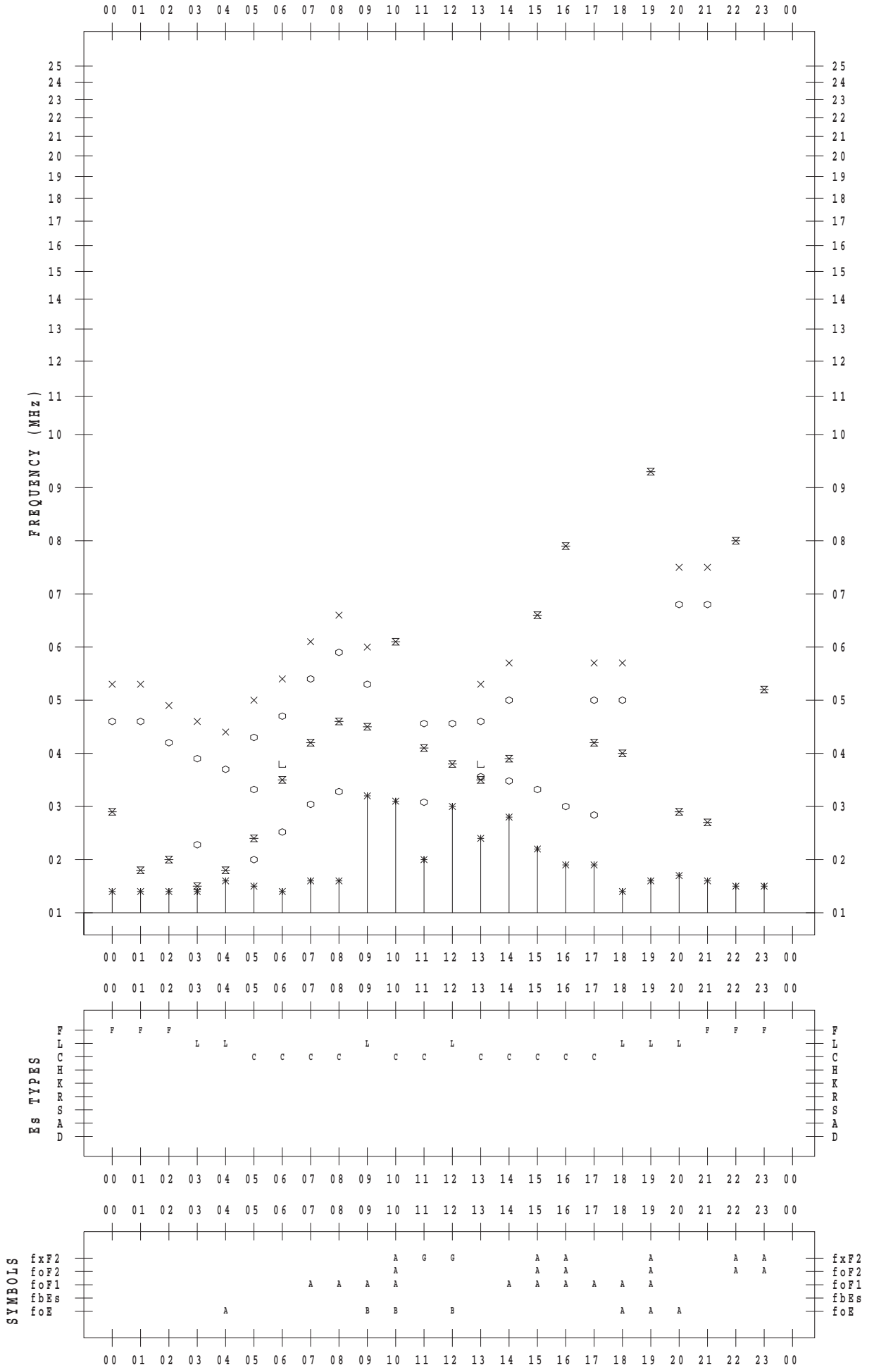
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/18

135 °E MEAN TIME



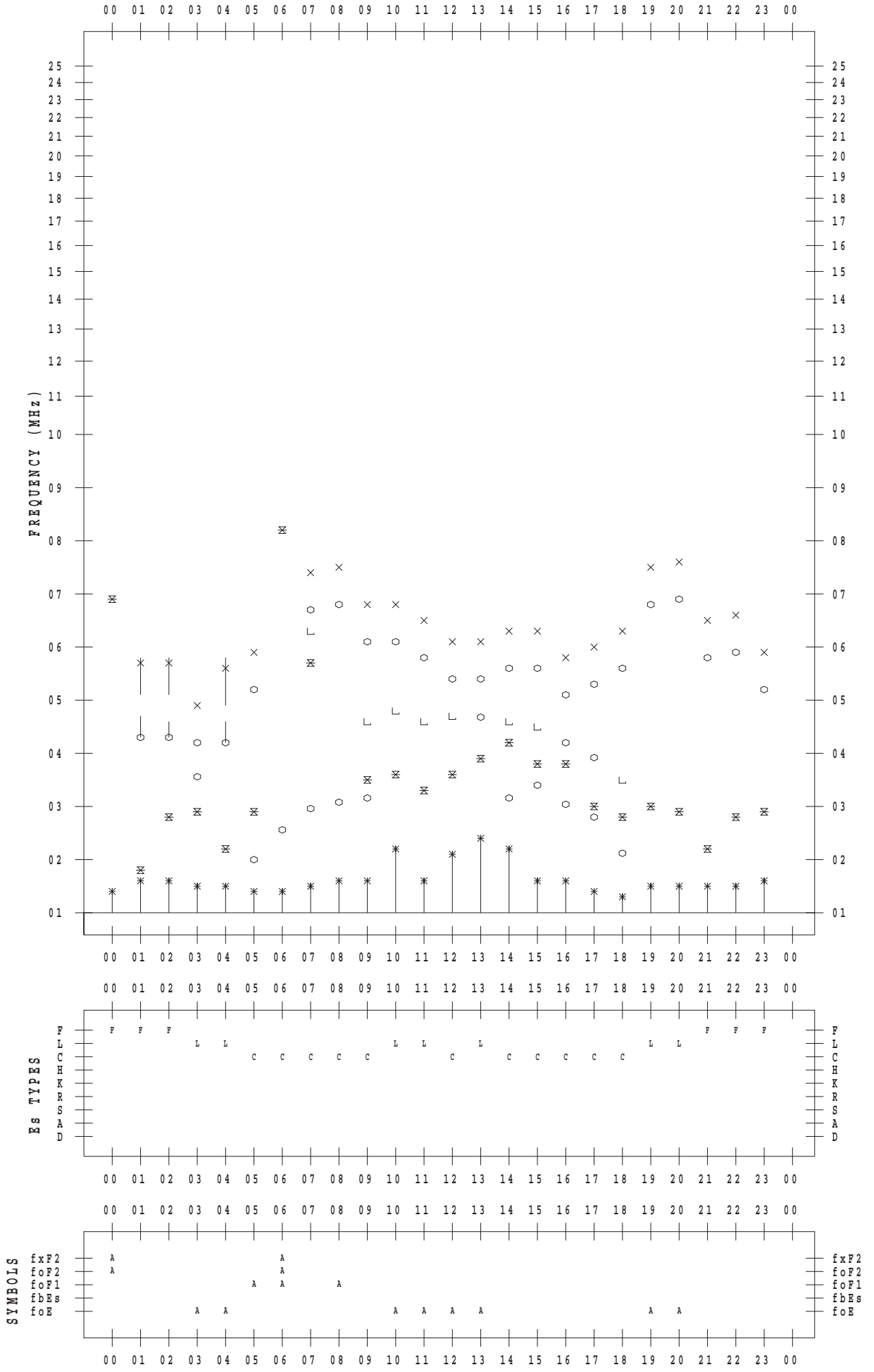
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/19

135 °E MEAN TIME



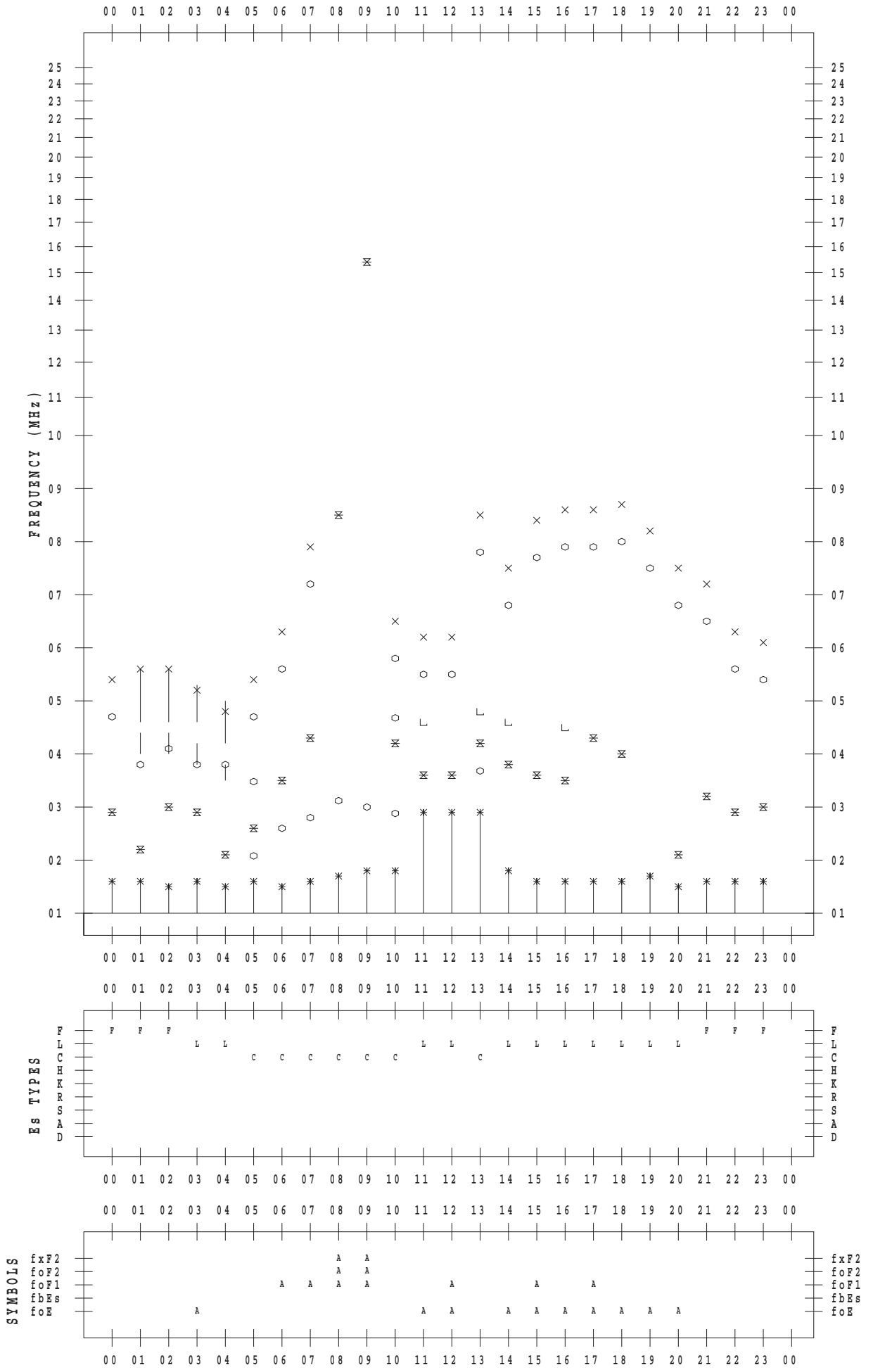
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/20

135 °E MEAN TIME



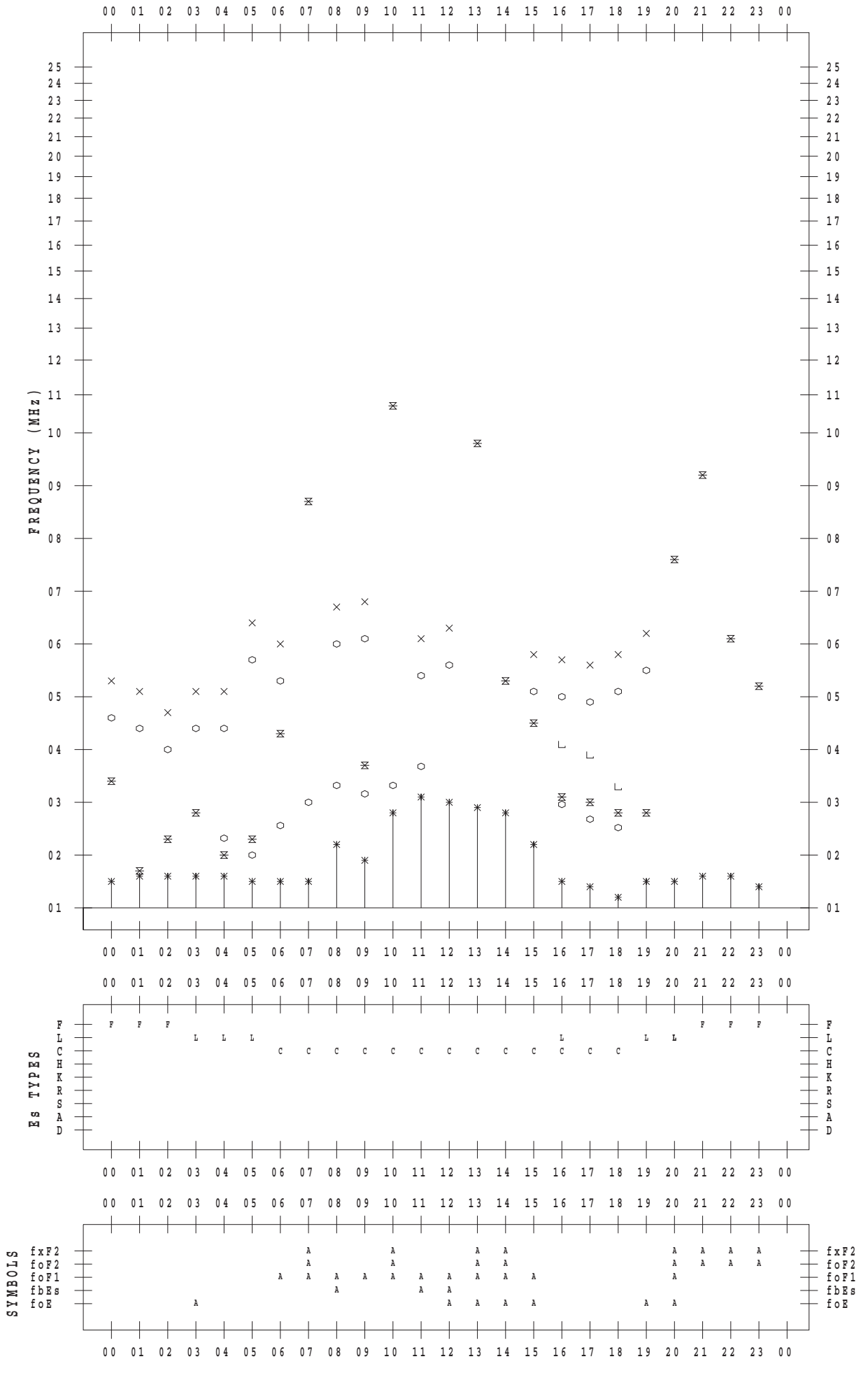
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/21

135 °E MEAN TIME



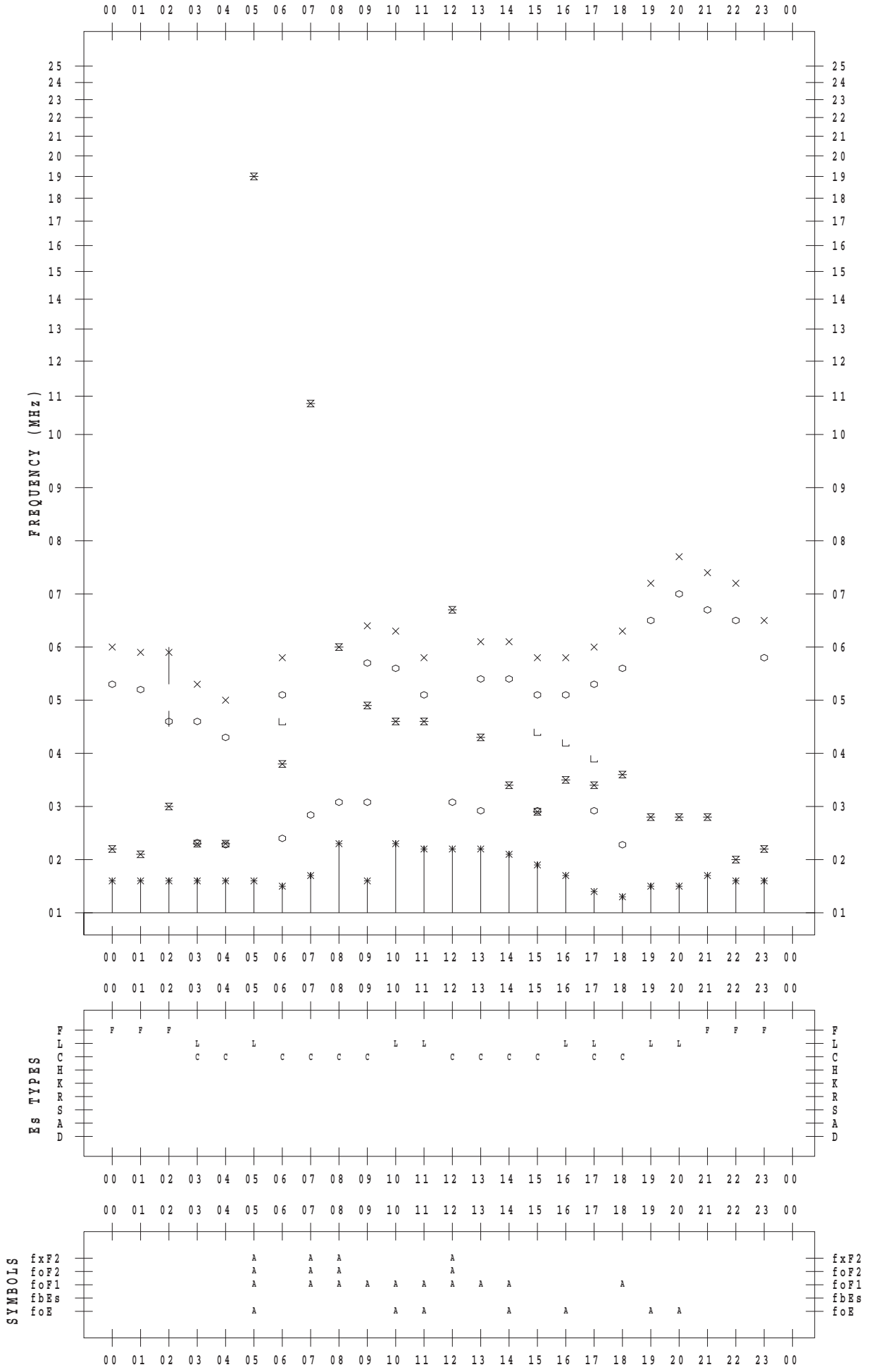
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/22

135 °E MEAN TIME



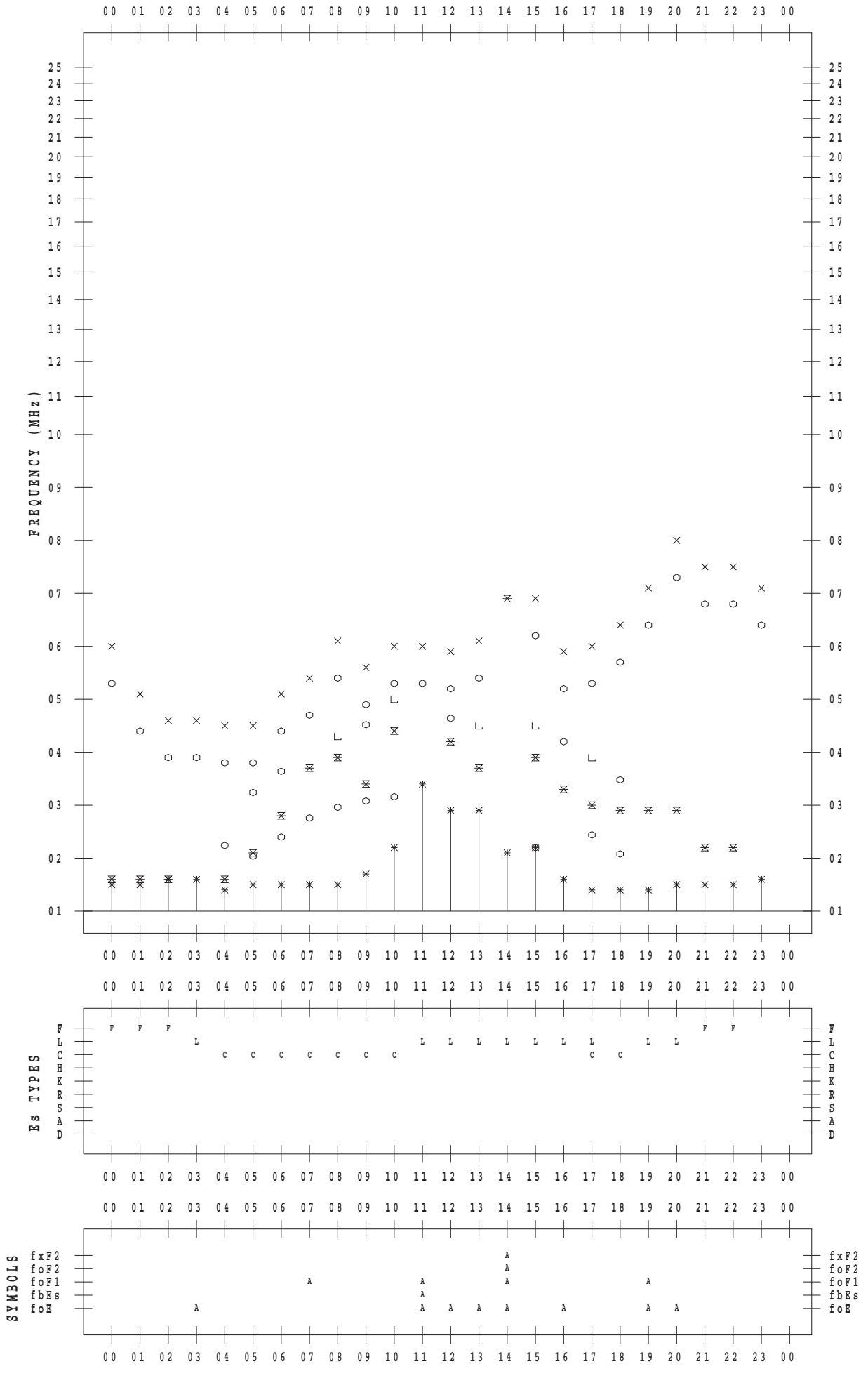
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/23

135 °E MEAN TIME



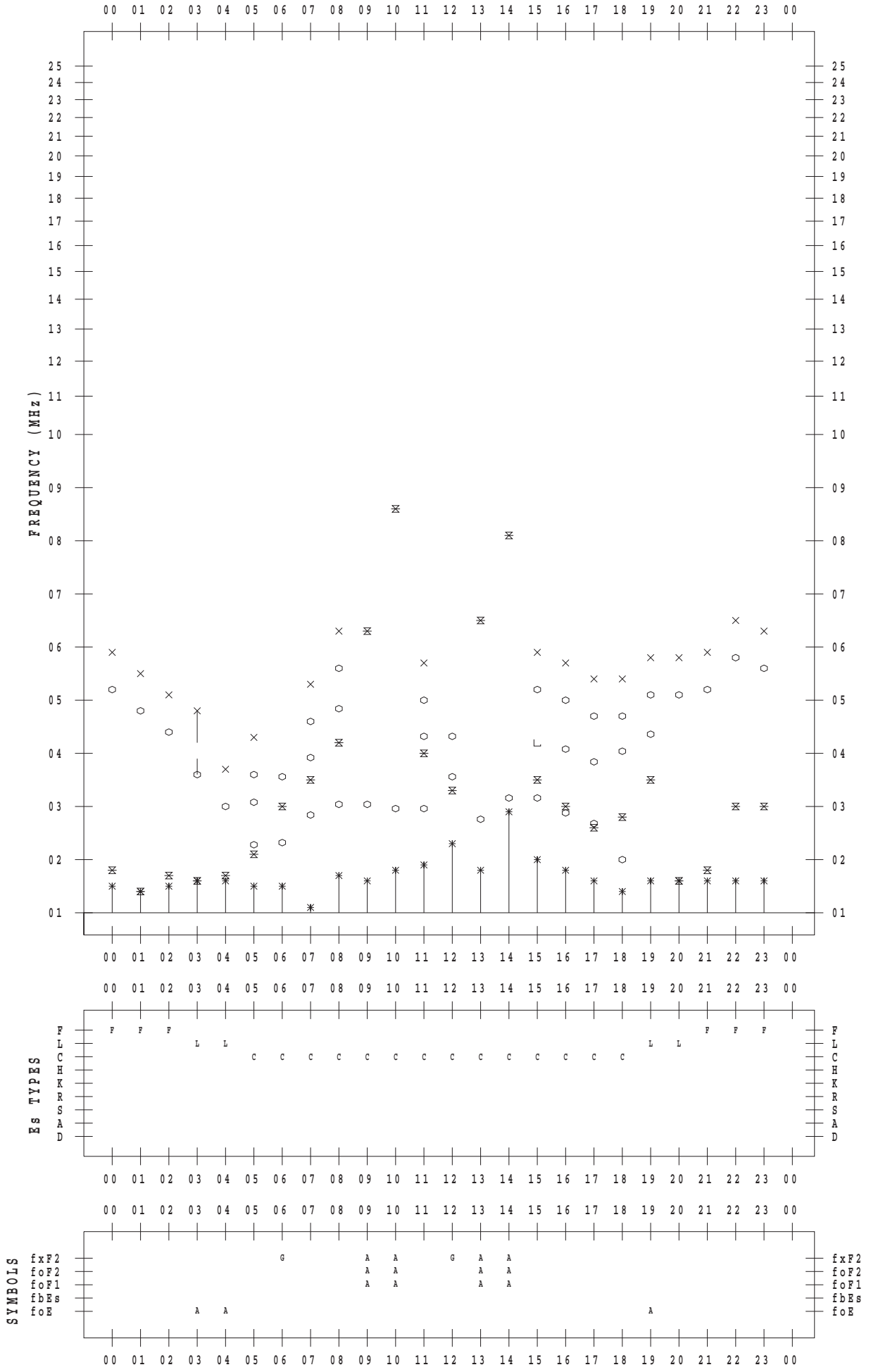
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/24

135 °E MEAN TIME



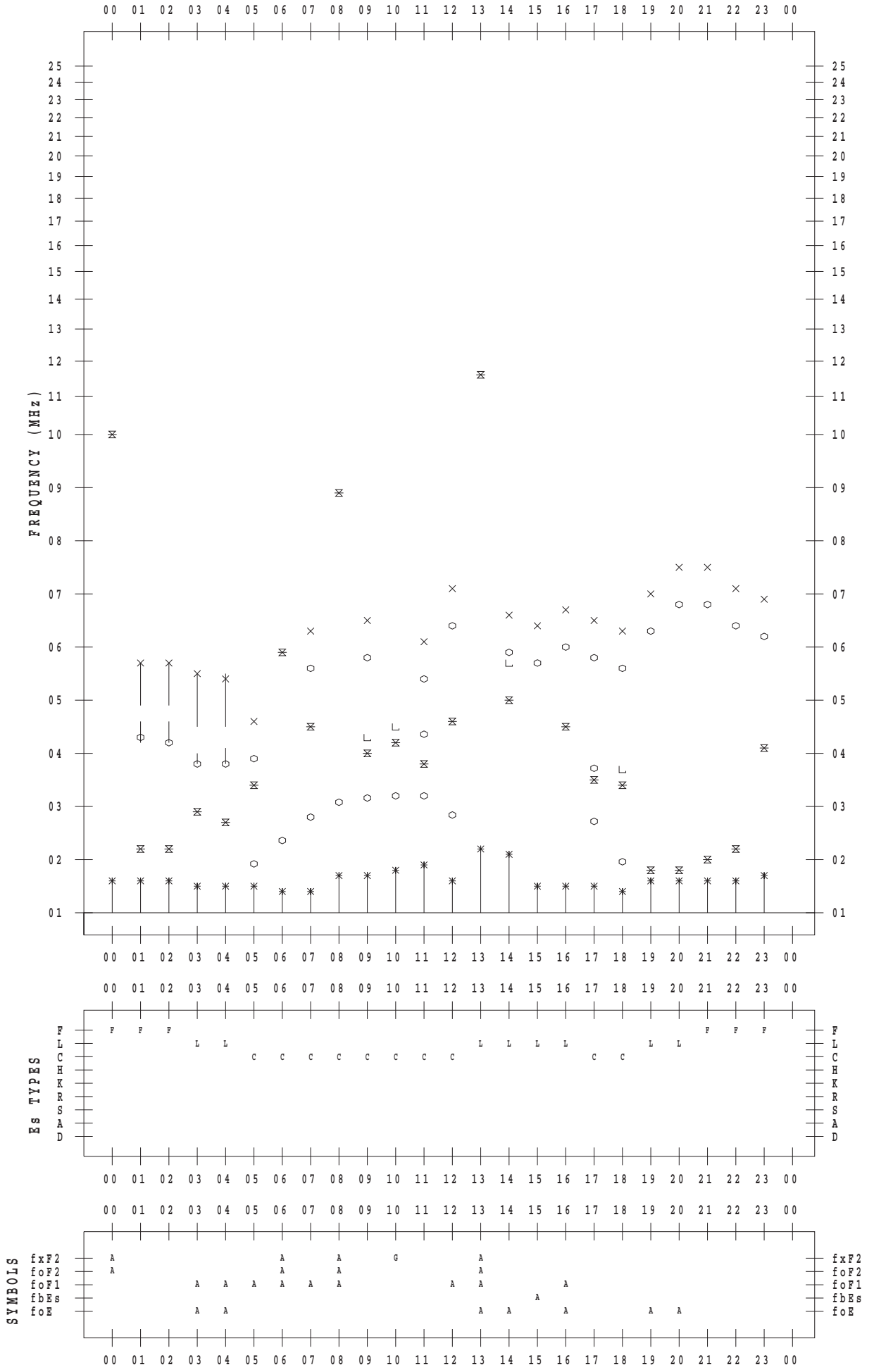
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/25

135 °E MEAN TIME



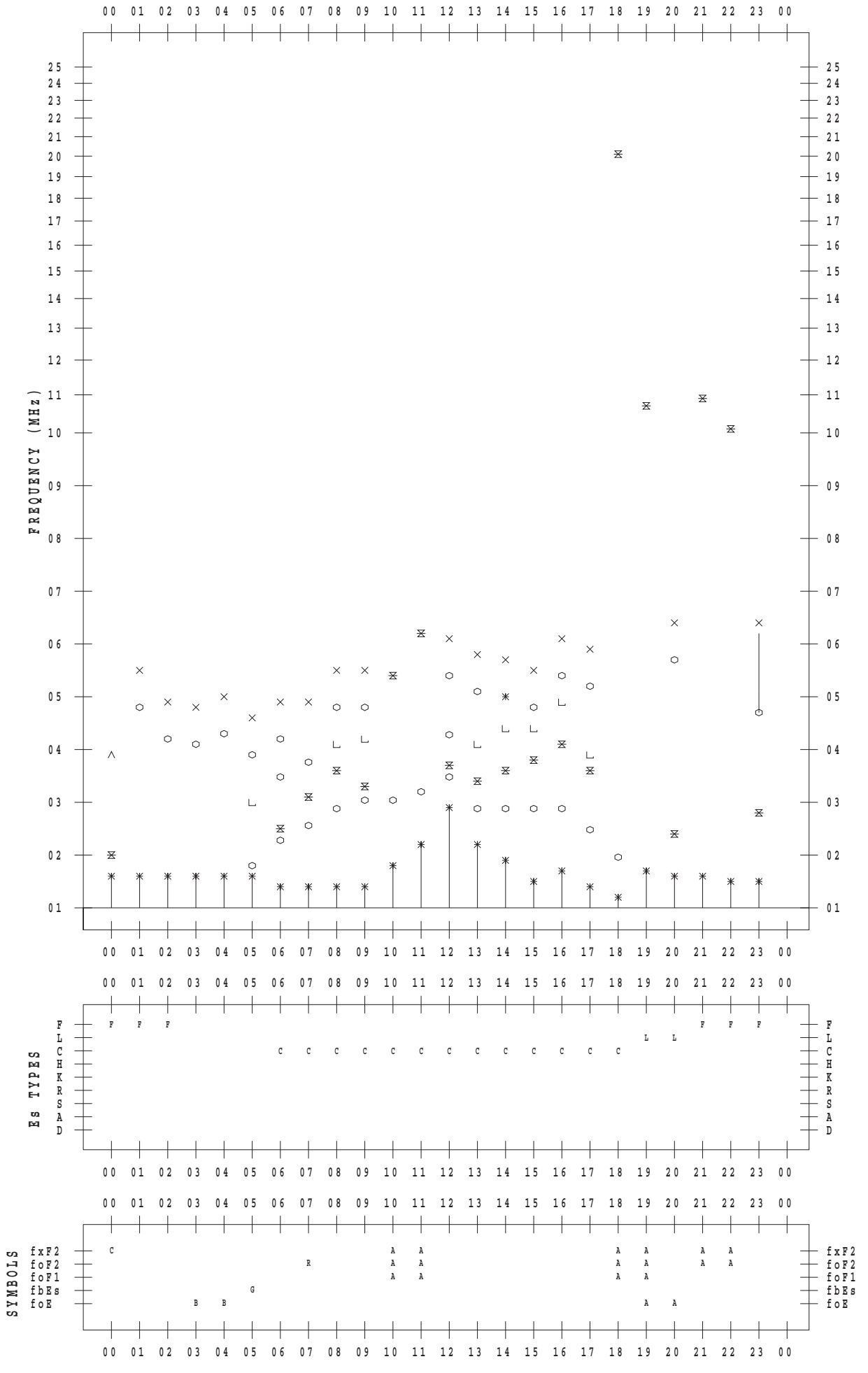
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/26

135 °E MEAN TIME



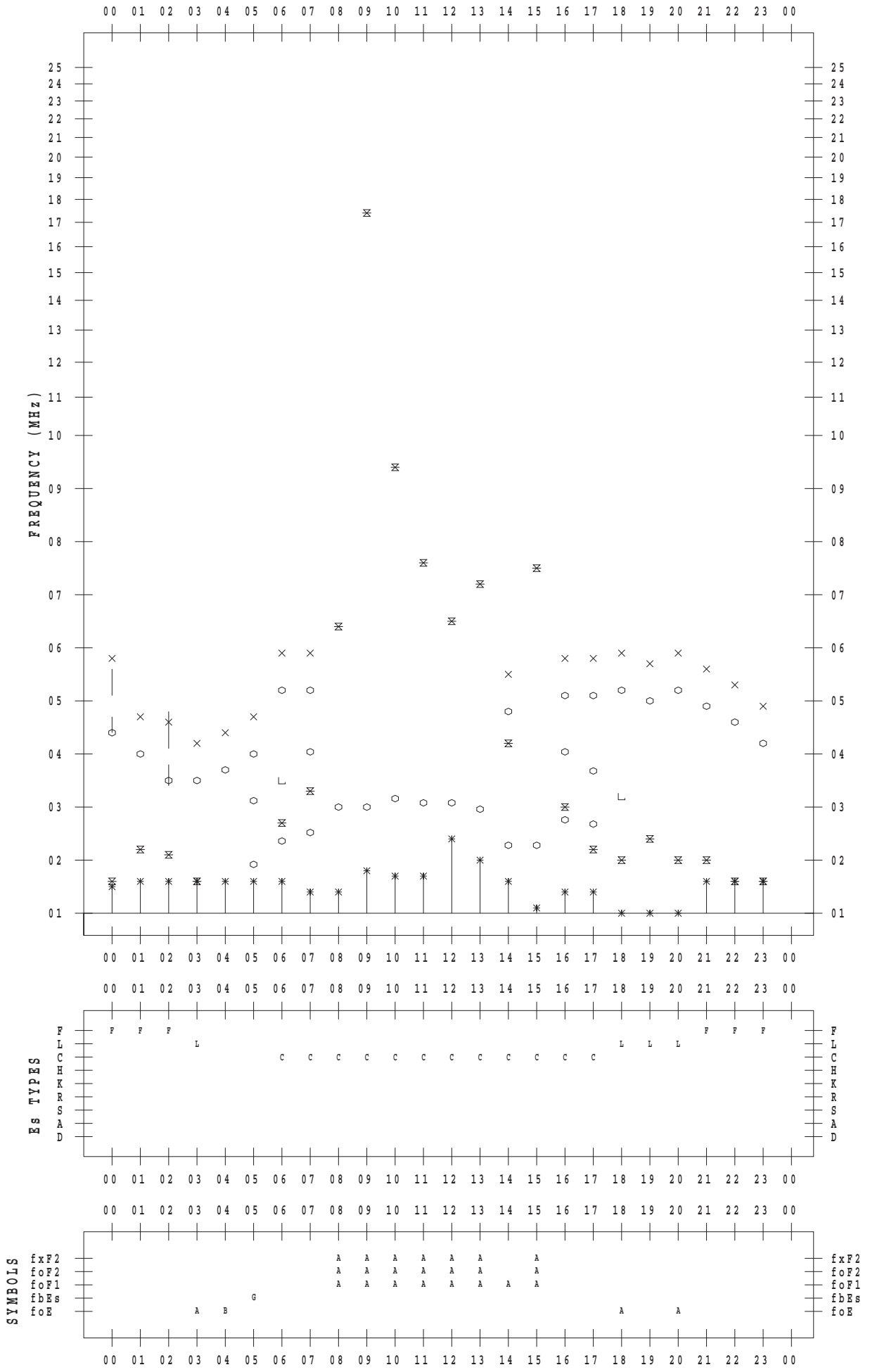
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/27

135 °E MEAN TIME



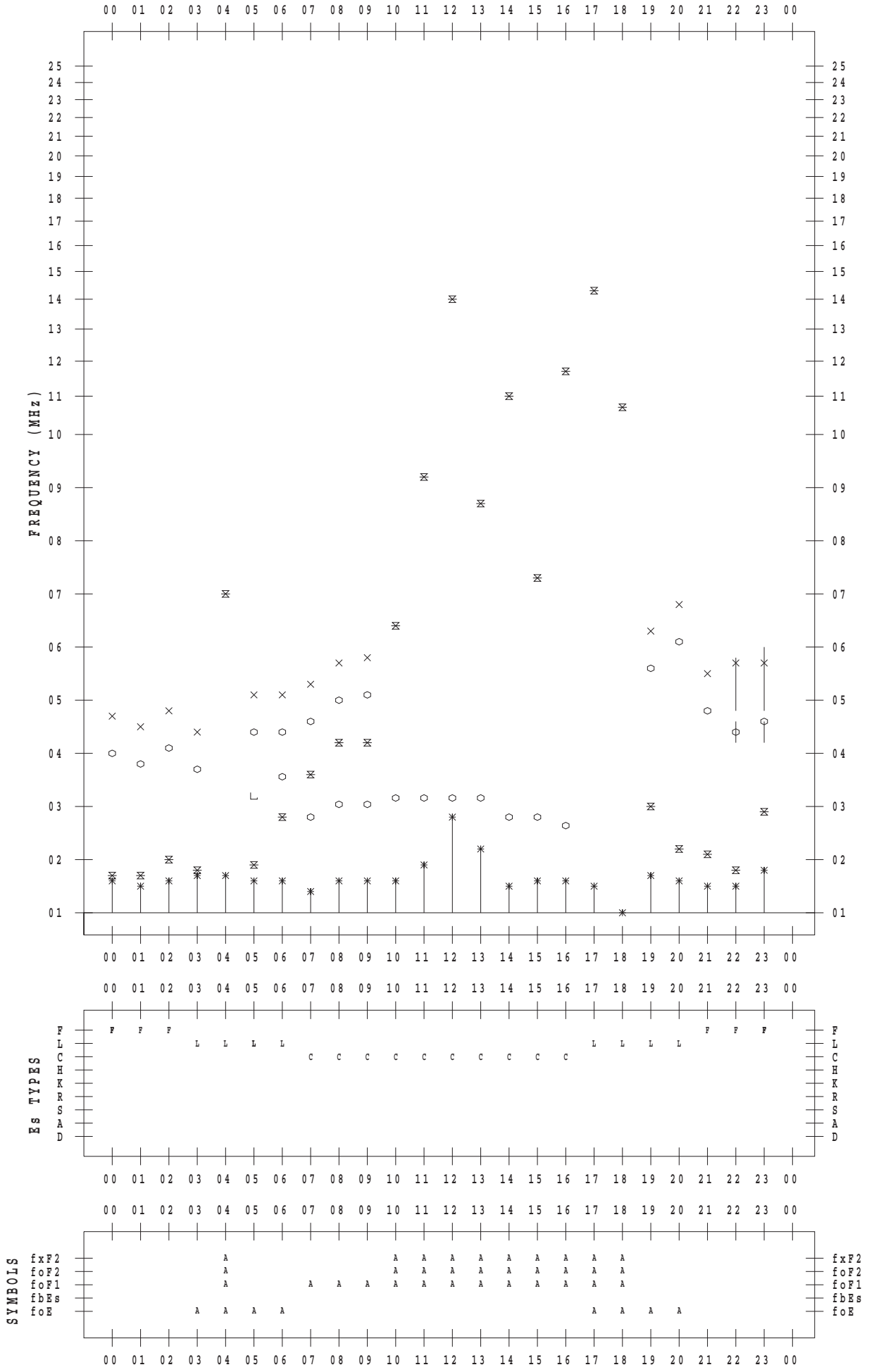
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/28

135 °E MEAN TIME



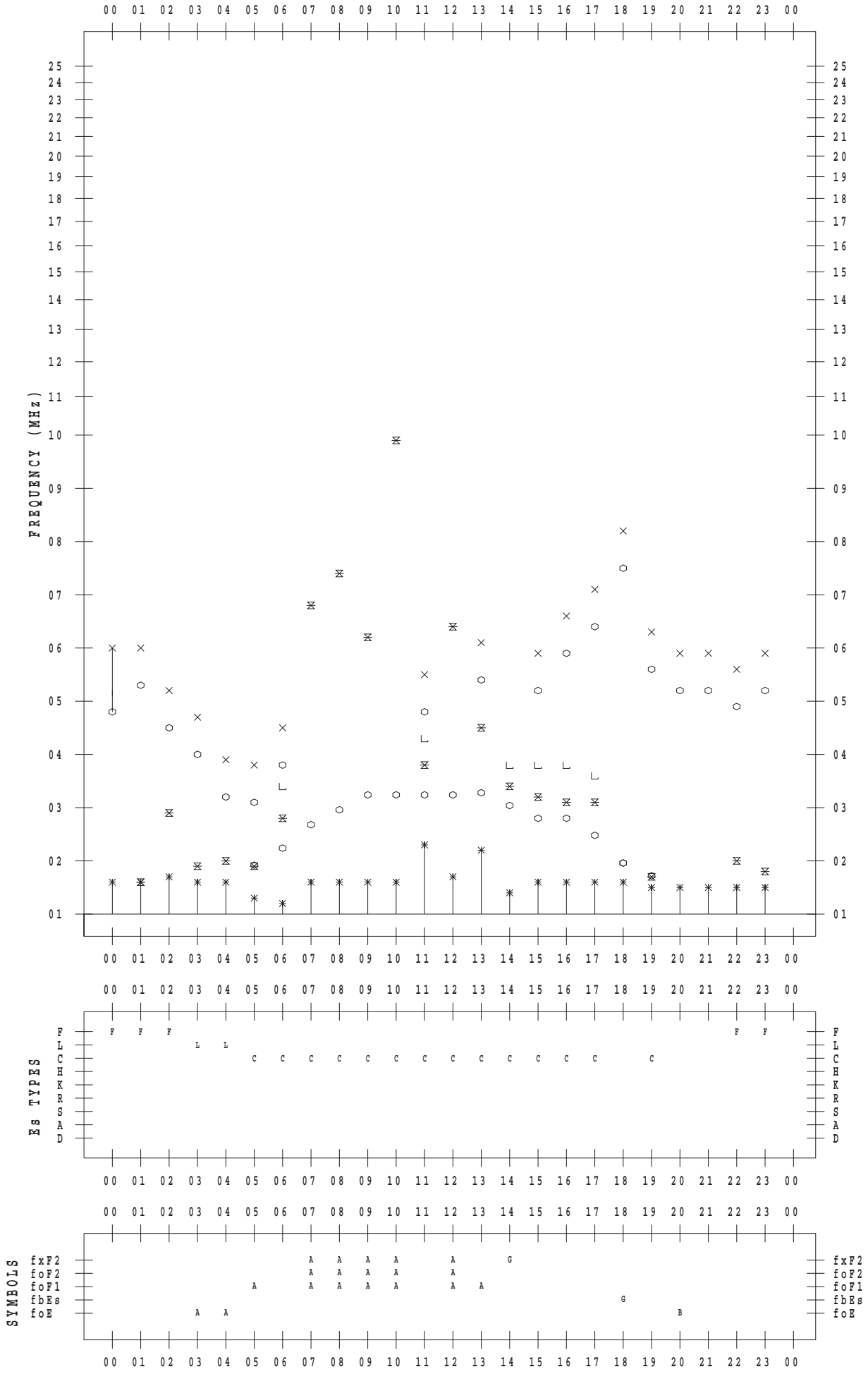
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/29

135 °E MEAN TIME



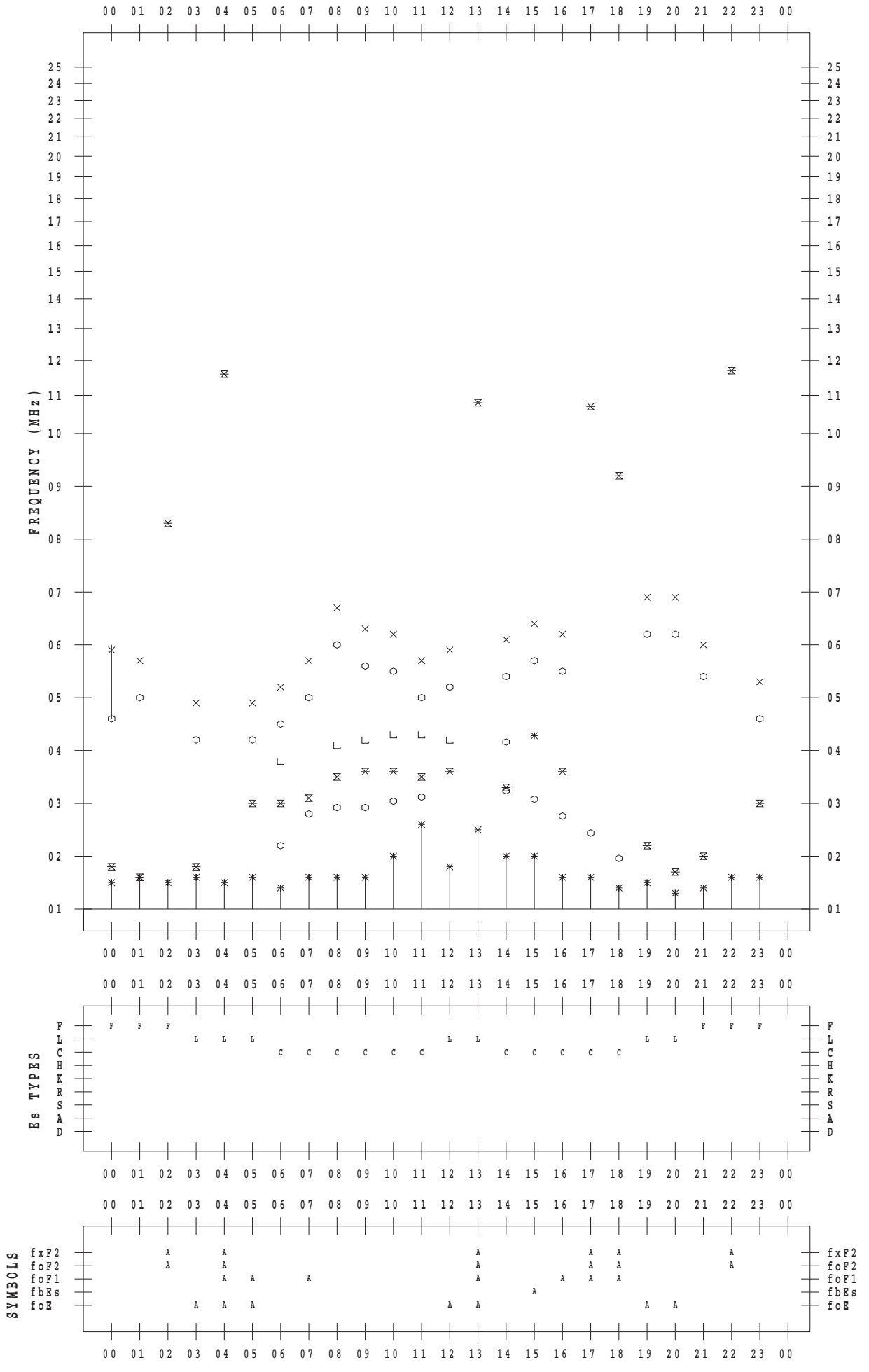
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/30

135 °E MEAN TIME



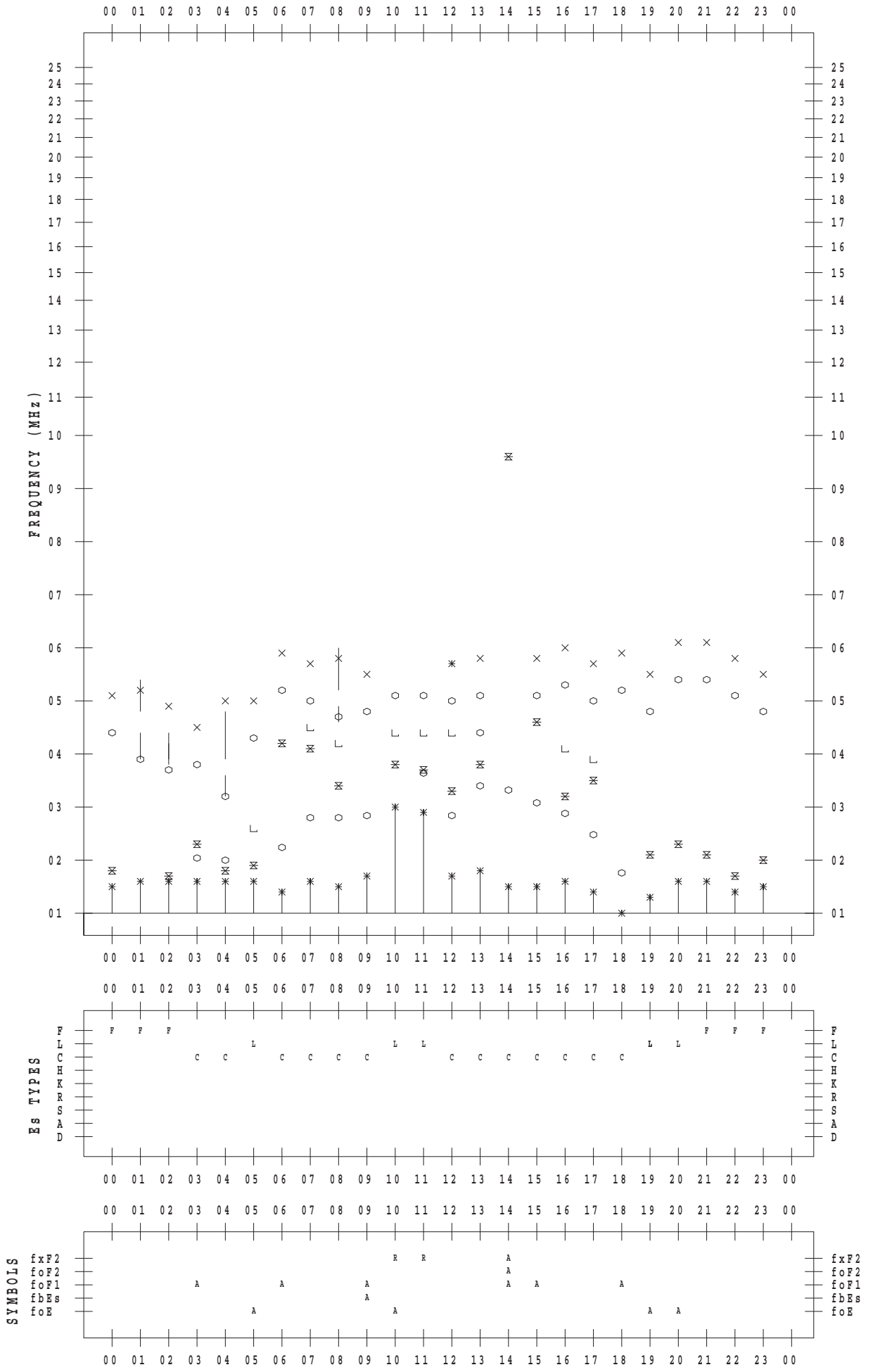
f-PLOT DATA

SCALER : K.FUKUSHIMA

STATION : Wakkanai

DATE : 2016/ 7/31

135 °E MEAN TIME



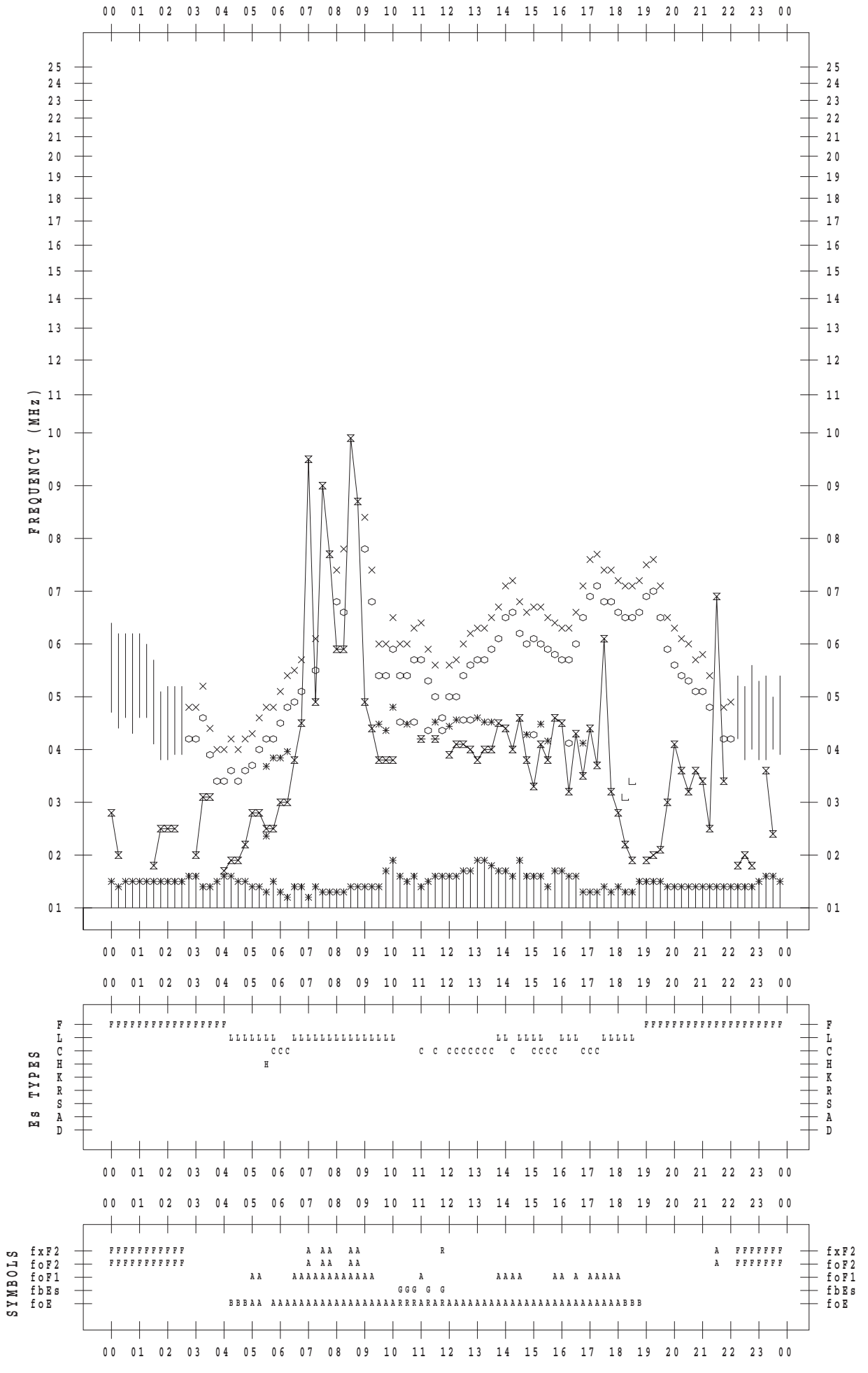
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 1

135 °E MEAN TIME



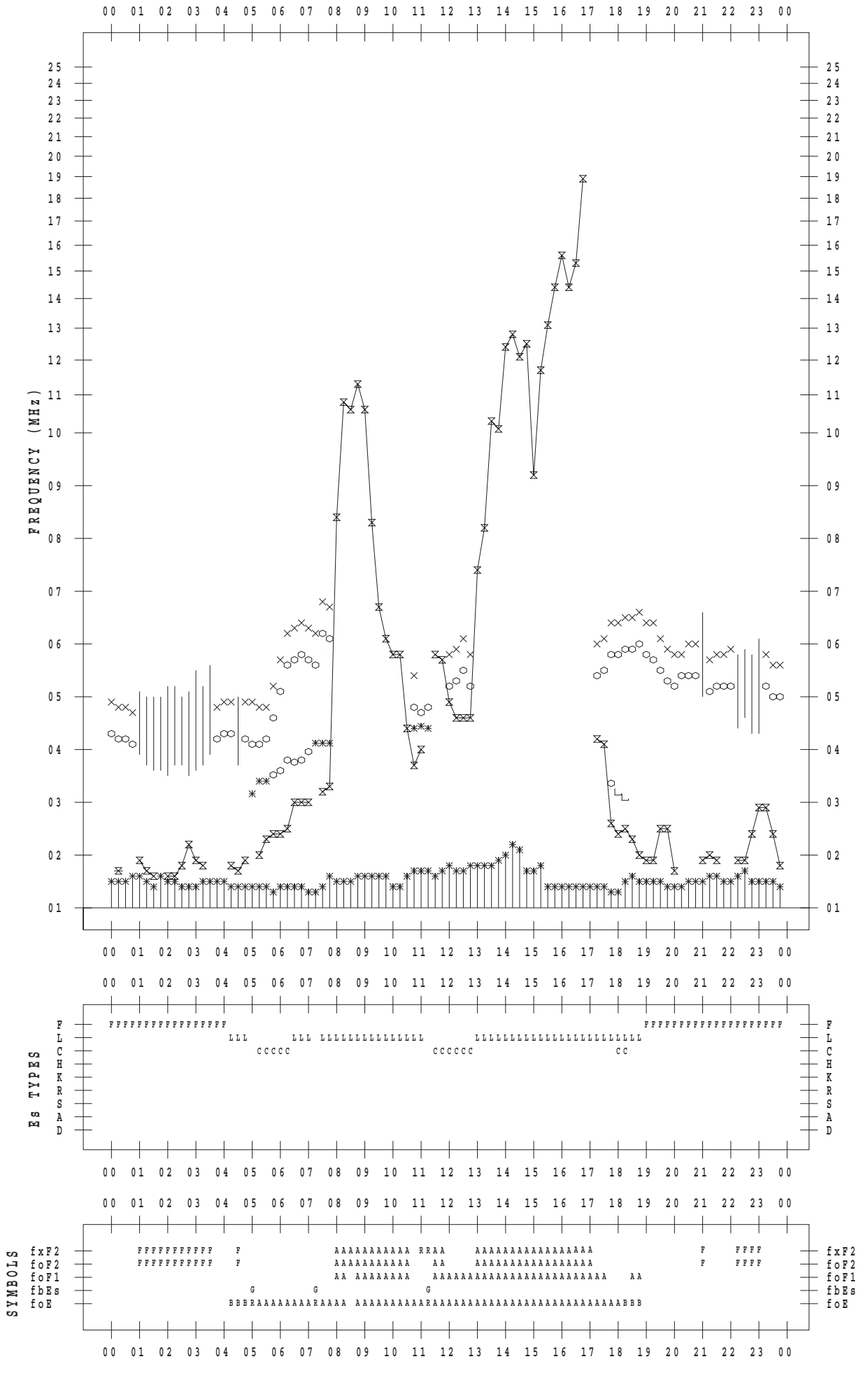
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 2

135 °E MEAN TIME



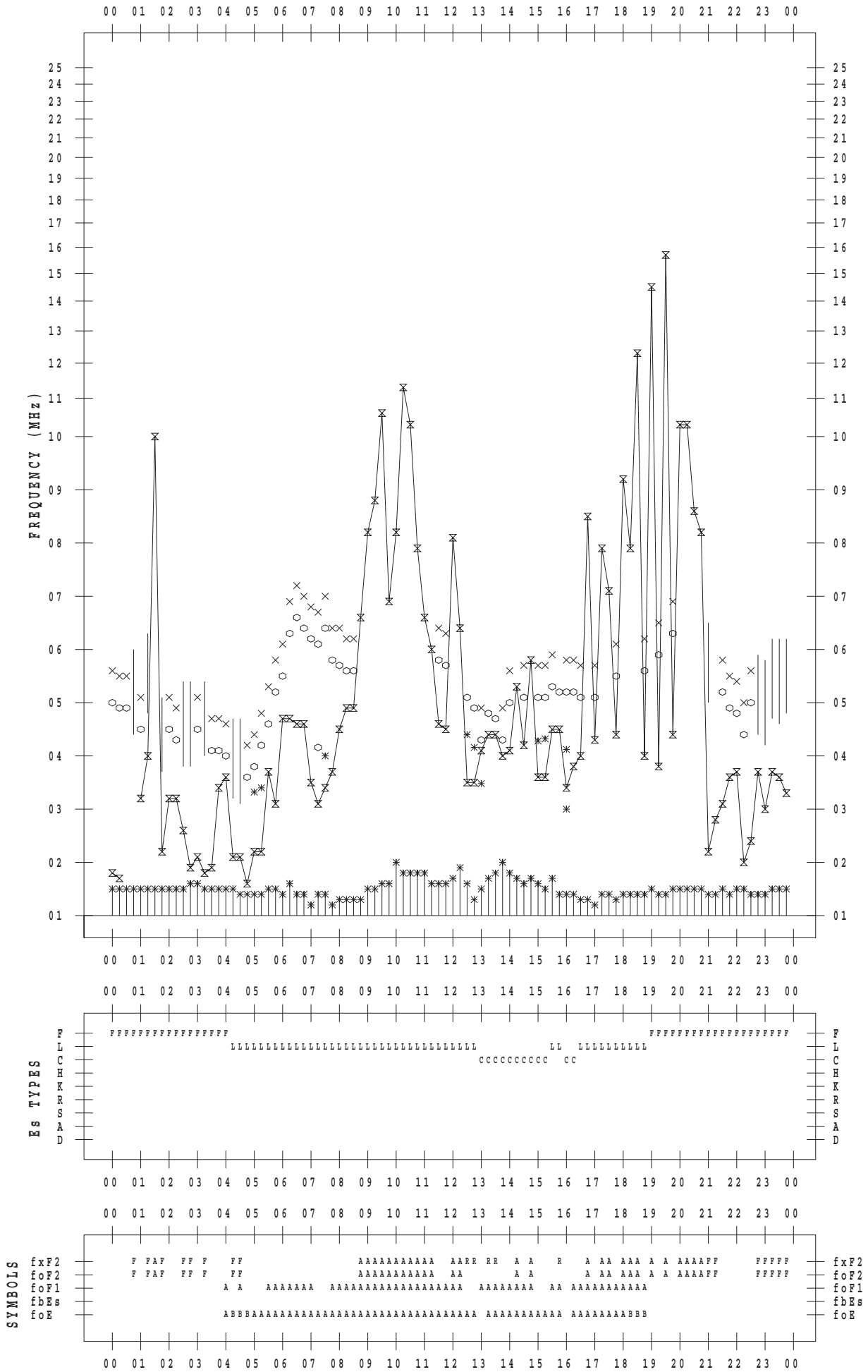
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 3

135 °E MEAN TIME



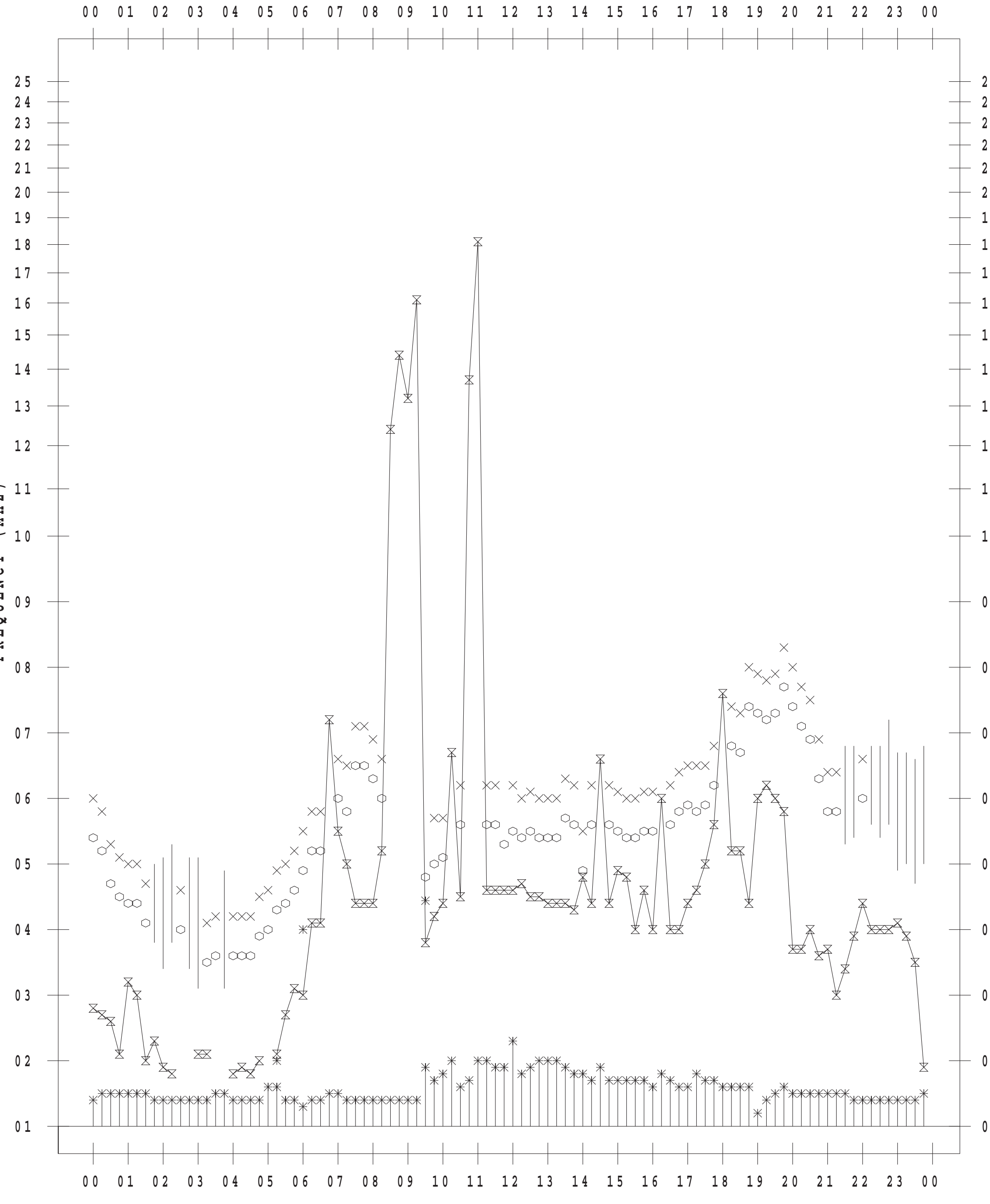
f-PLOT DATA

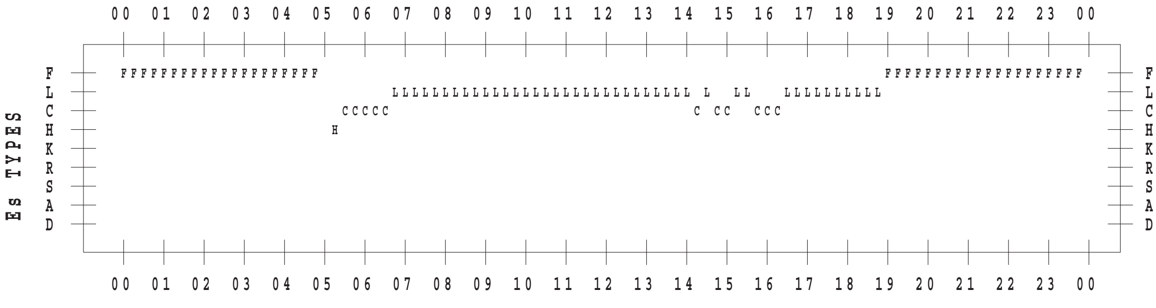
SCALER : I.NISHIMUTA

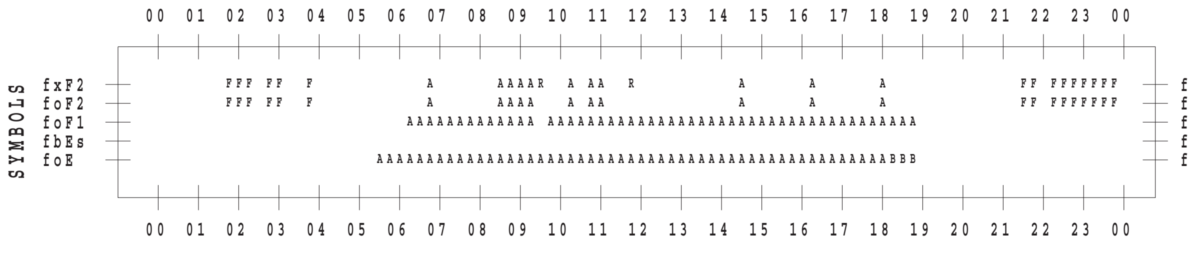
STATION : Kokubunji

DATE : 2016/ 7/ 4

135 °E MEAN TIME







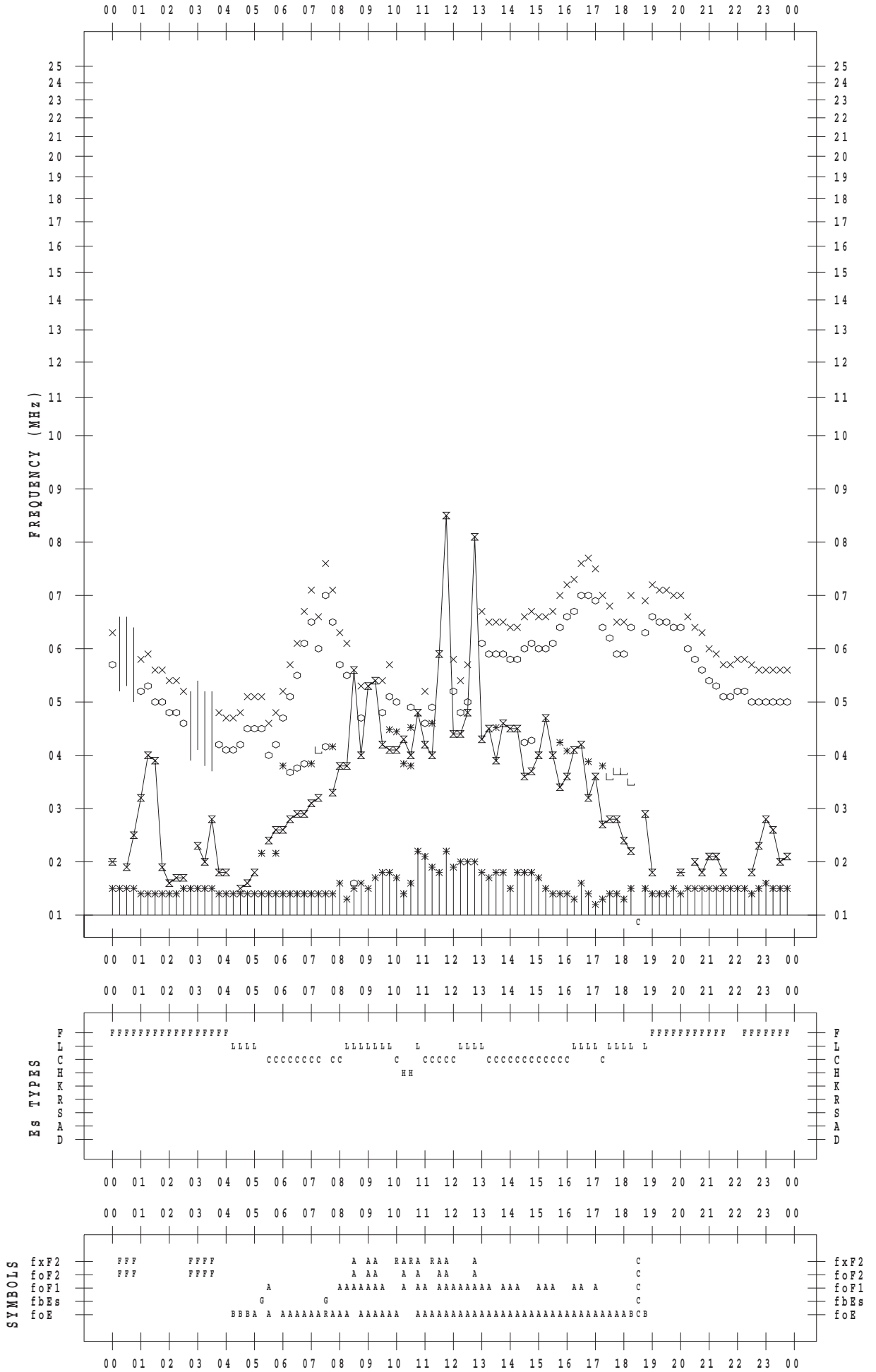
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 5

135 °E MEAN TIME



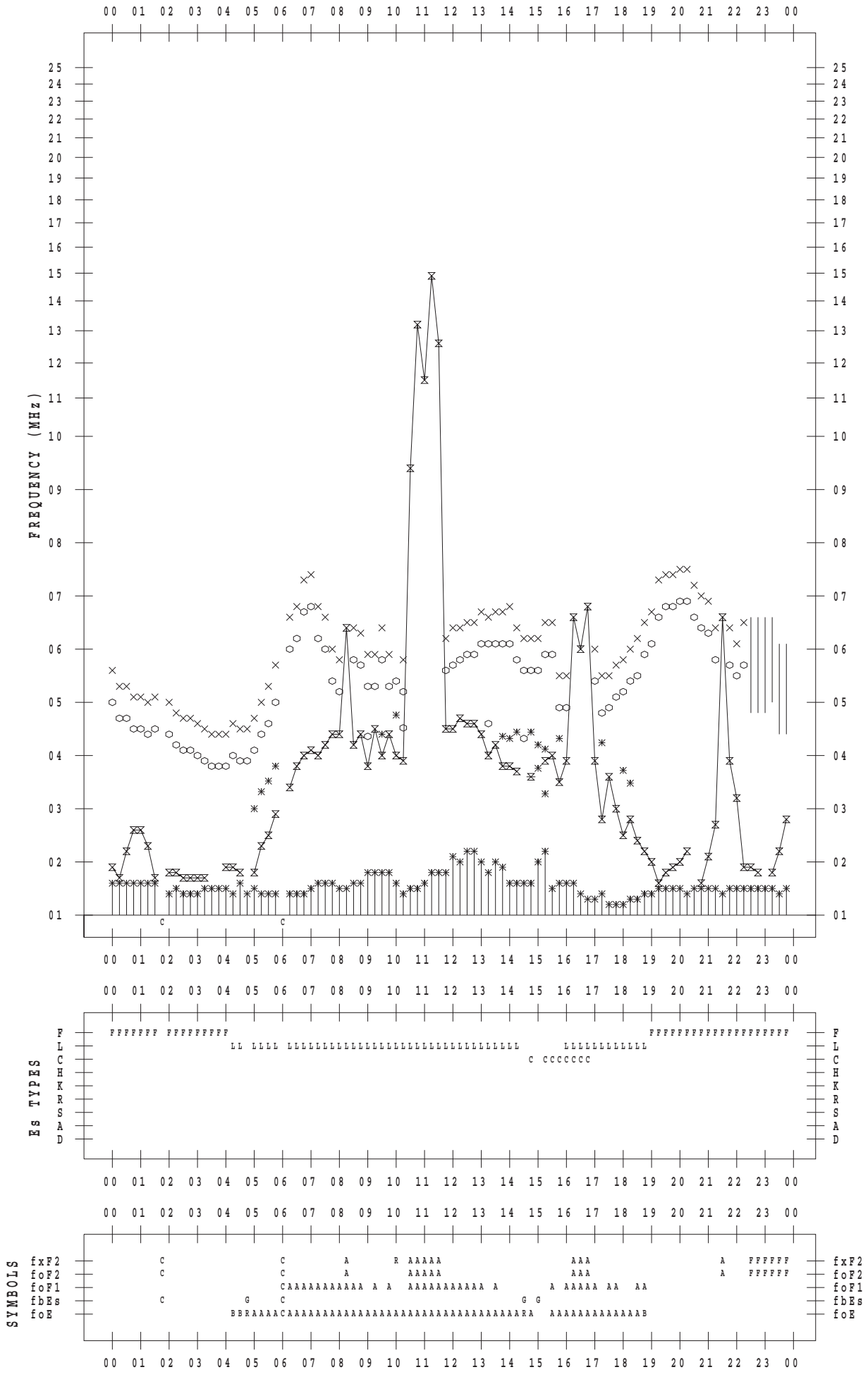
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 6

135 °E MEAN TIME



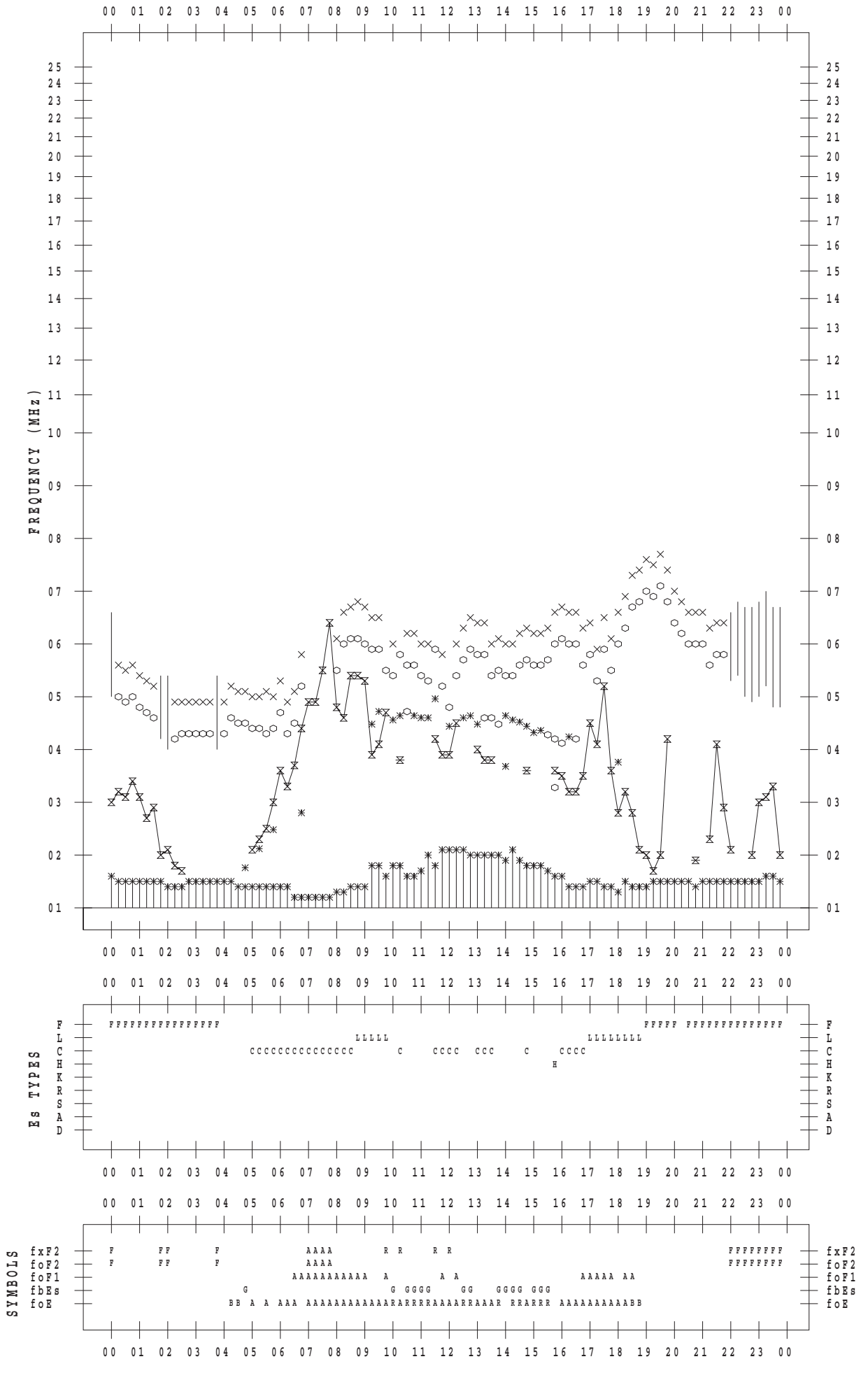
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 7

135 °E MEAN TIME



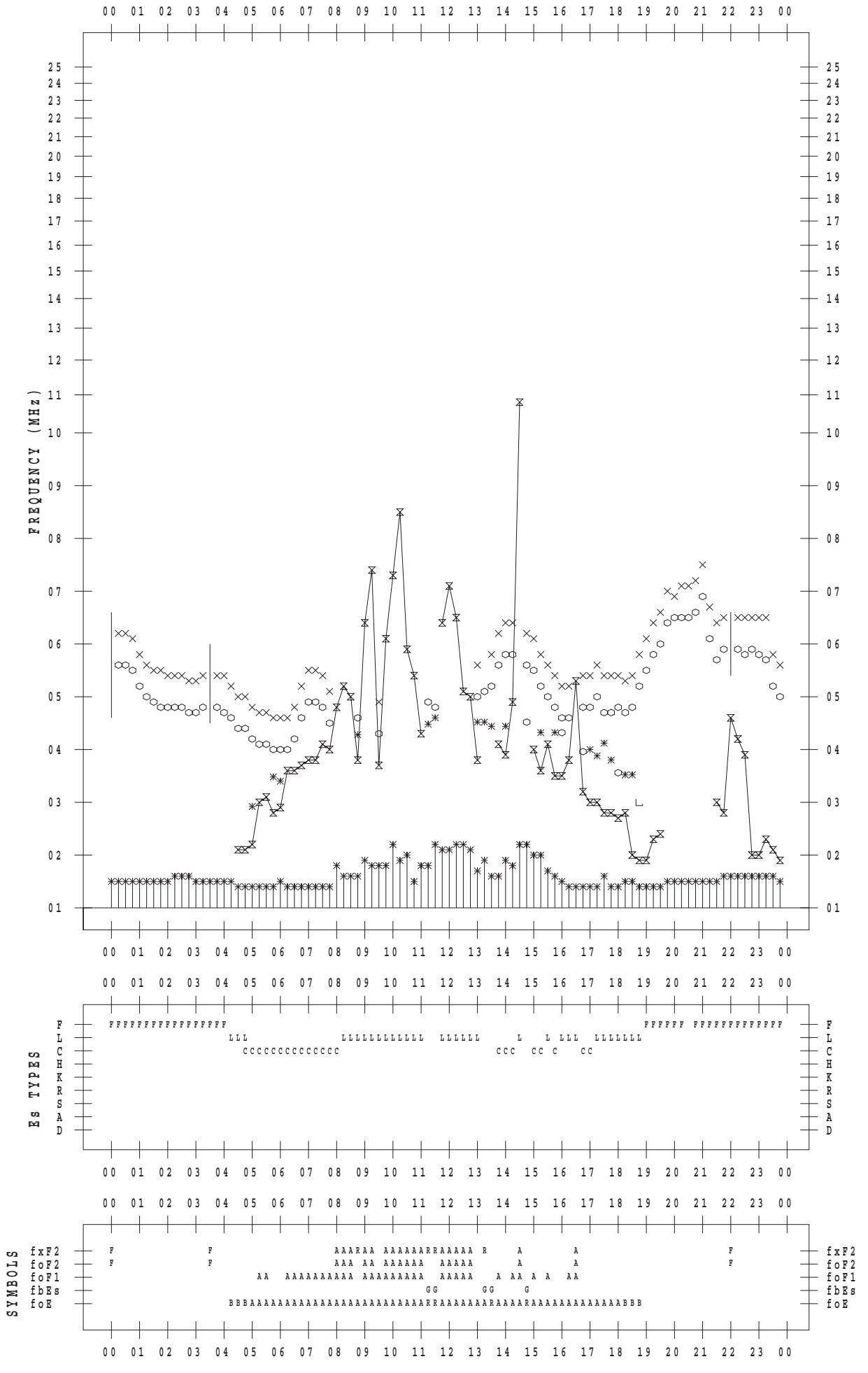
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/ 8

135 °E MEAN TIME

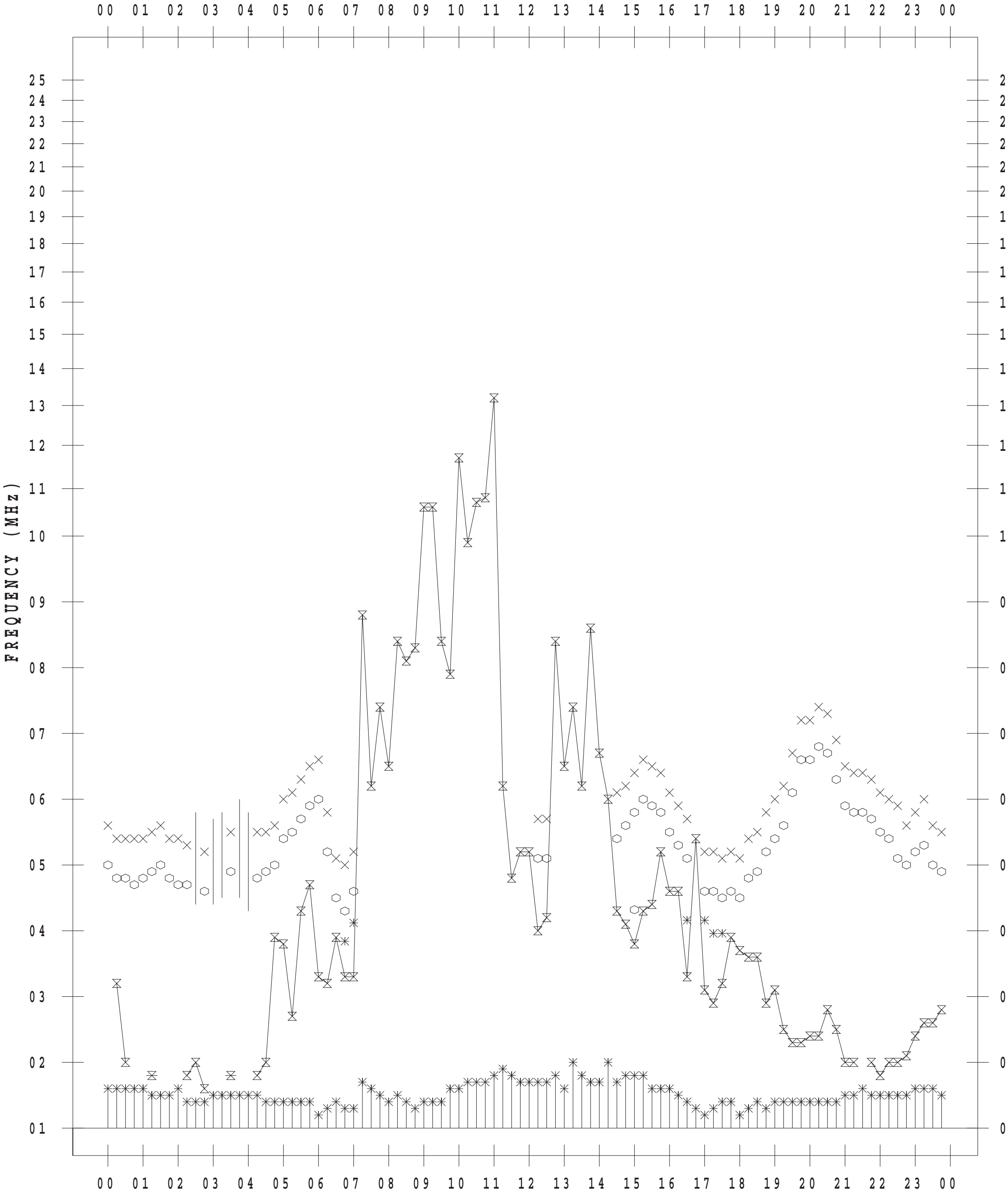


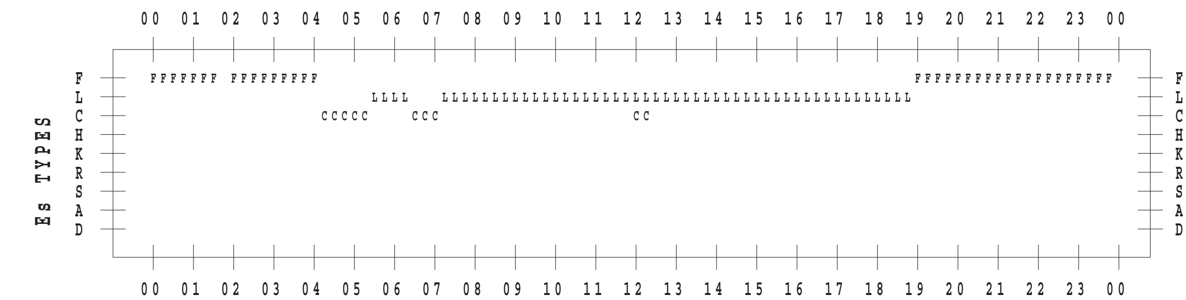
f-PLOT DATA

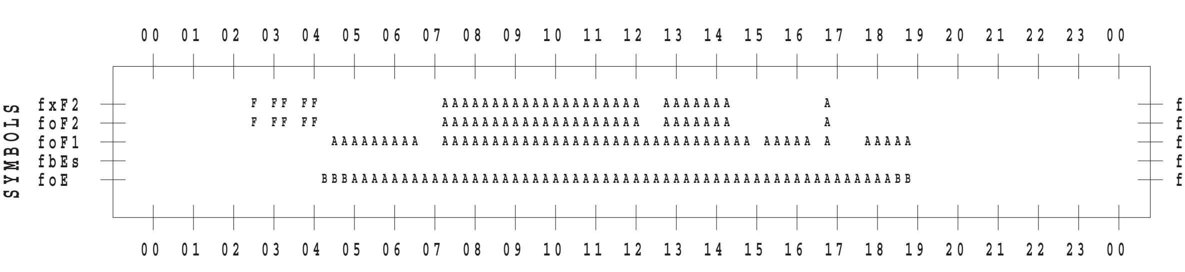
SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2016/ 7/ 9

135 °E MEAN TIME







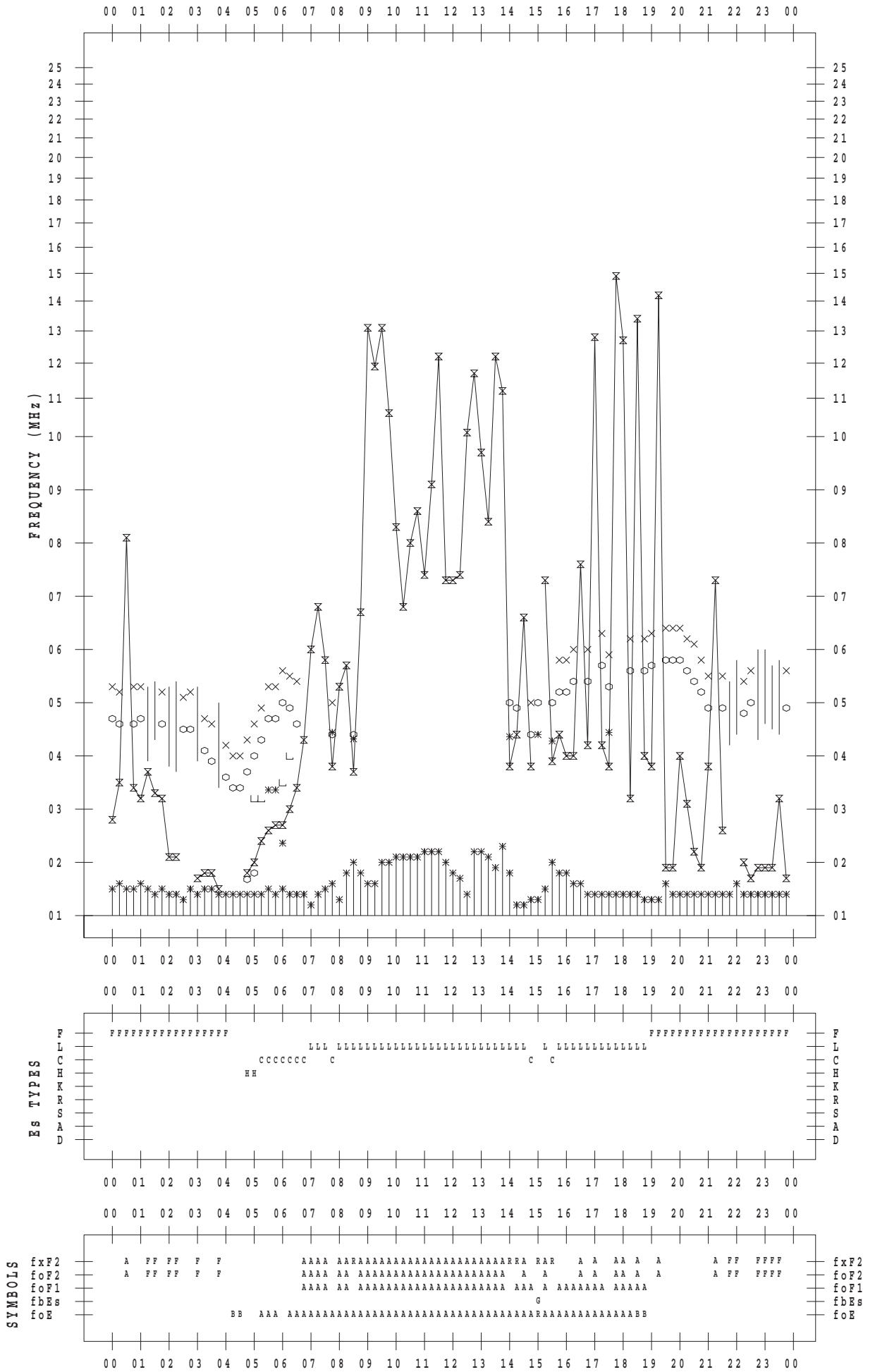
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/10

135 °E MEAN TIME



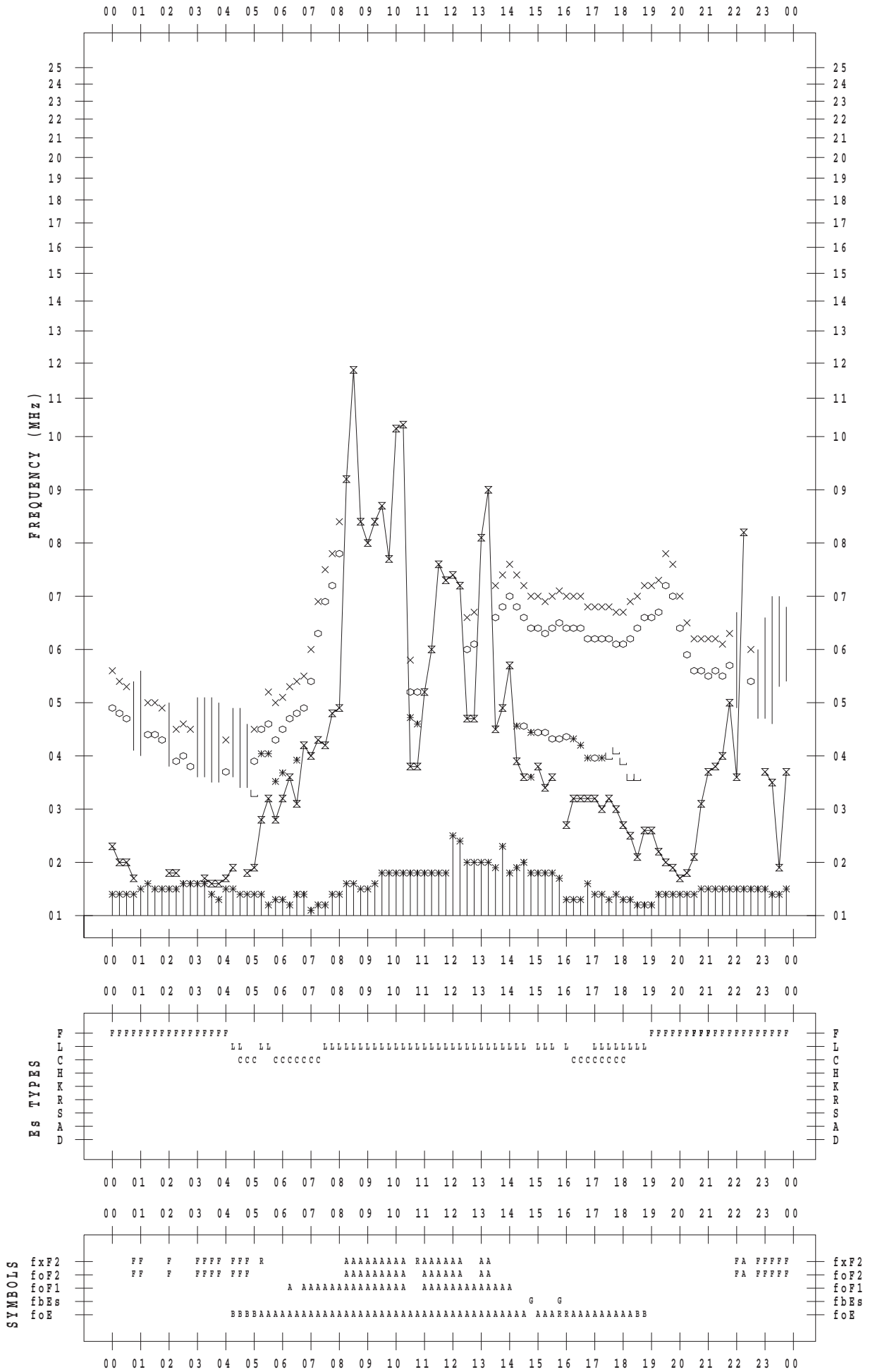
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/11

135 °E MEAN TIME



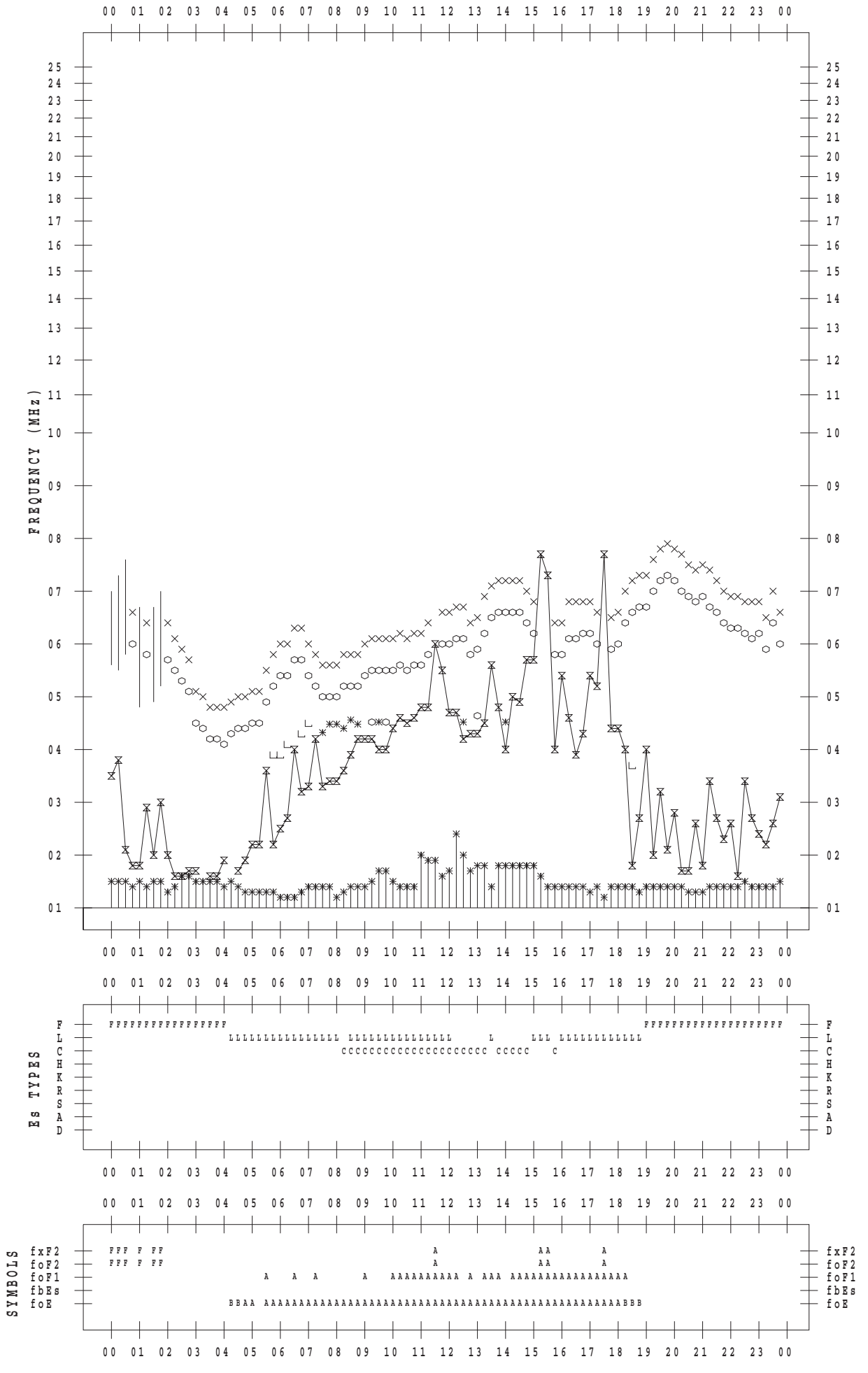
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/12

135 °E MEAN TIME



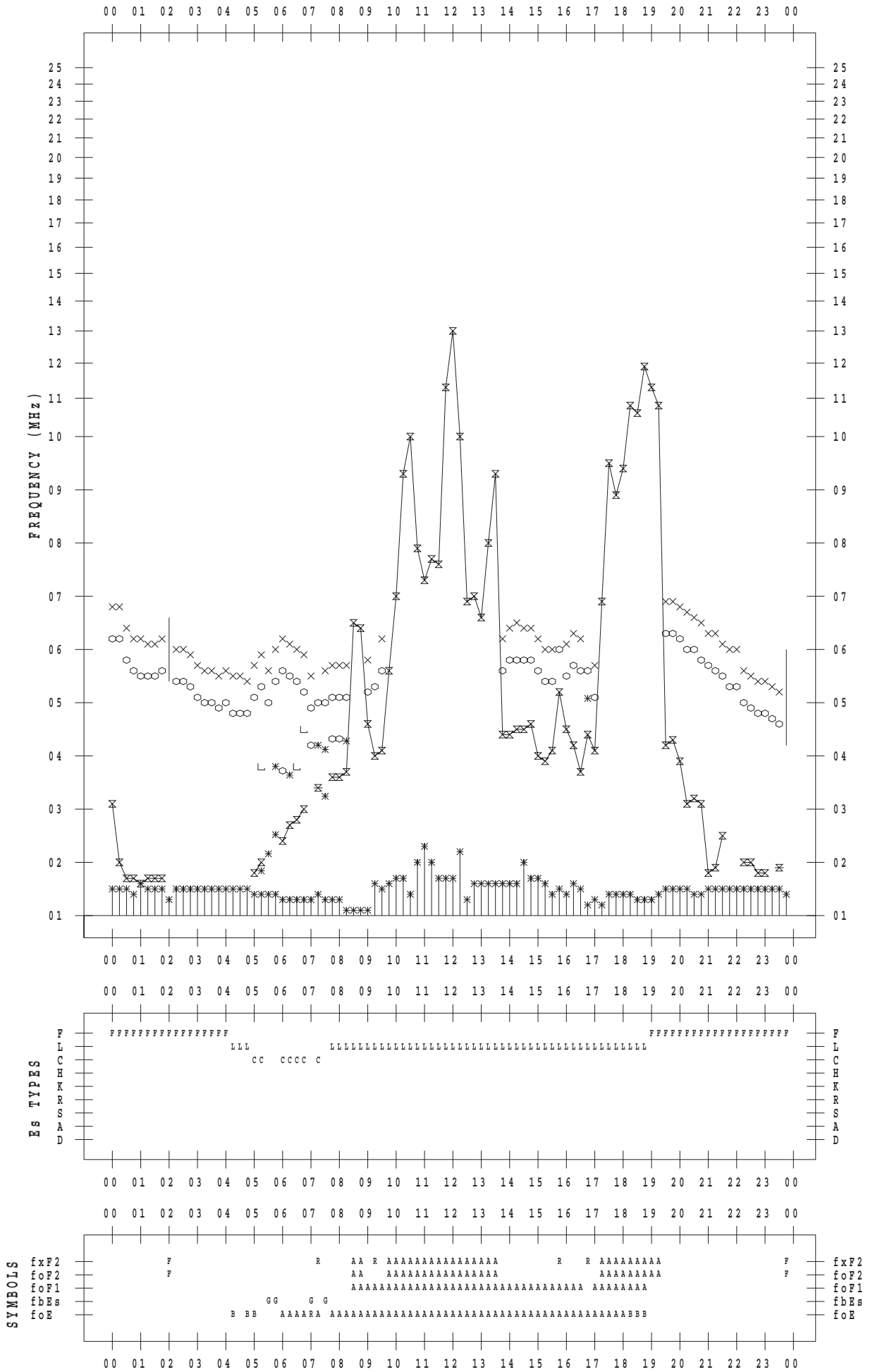
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/13

135 °E MEAN TIME



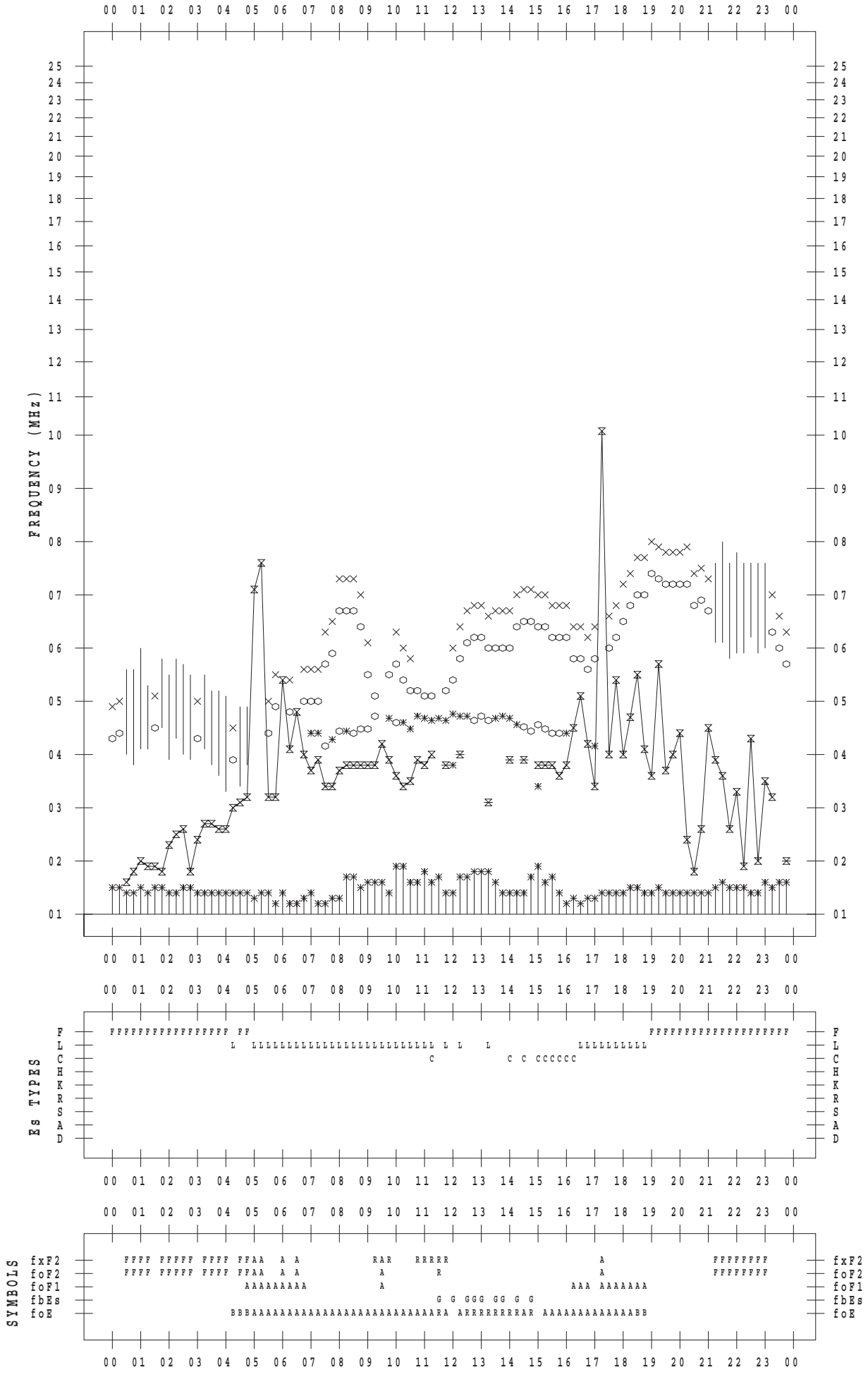
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/14

135 °E MEAN TIME



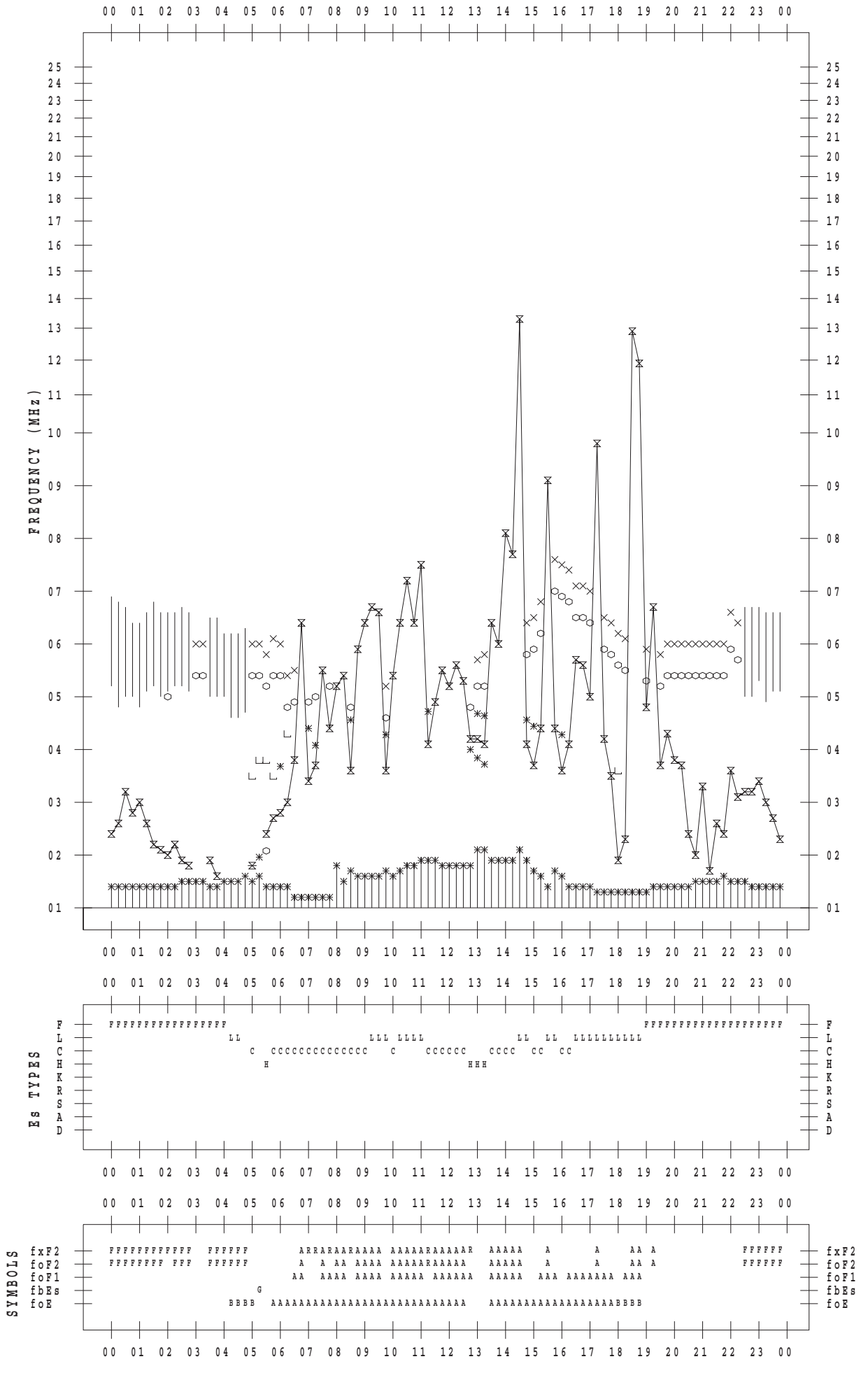
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/15

135 °E MEAN TIME



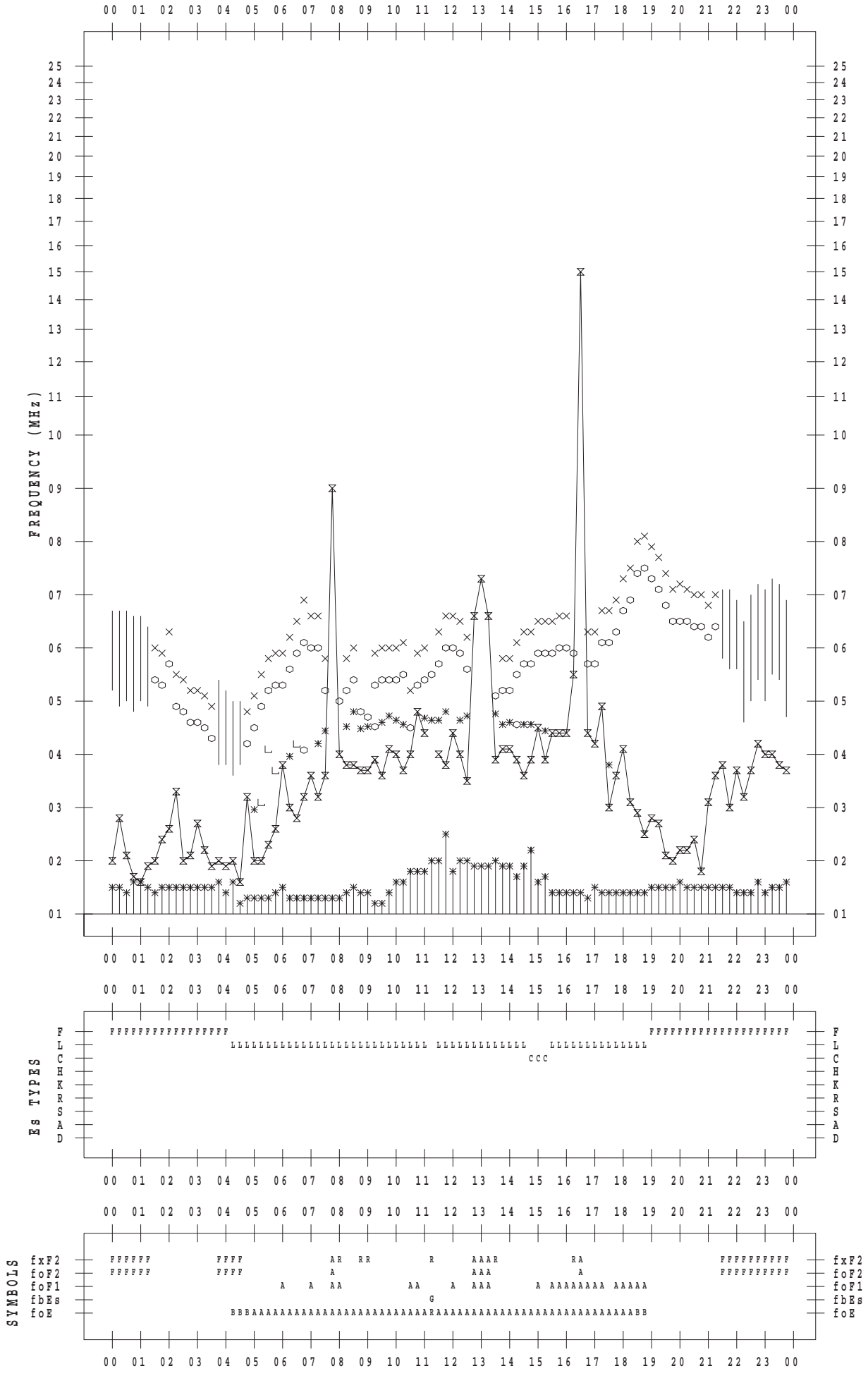
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/16

135 °E MEAN TIME



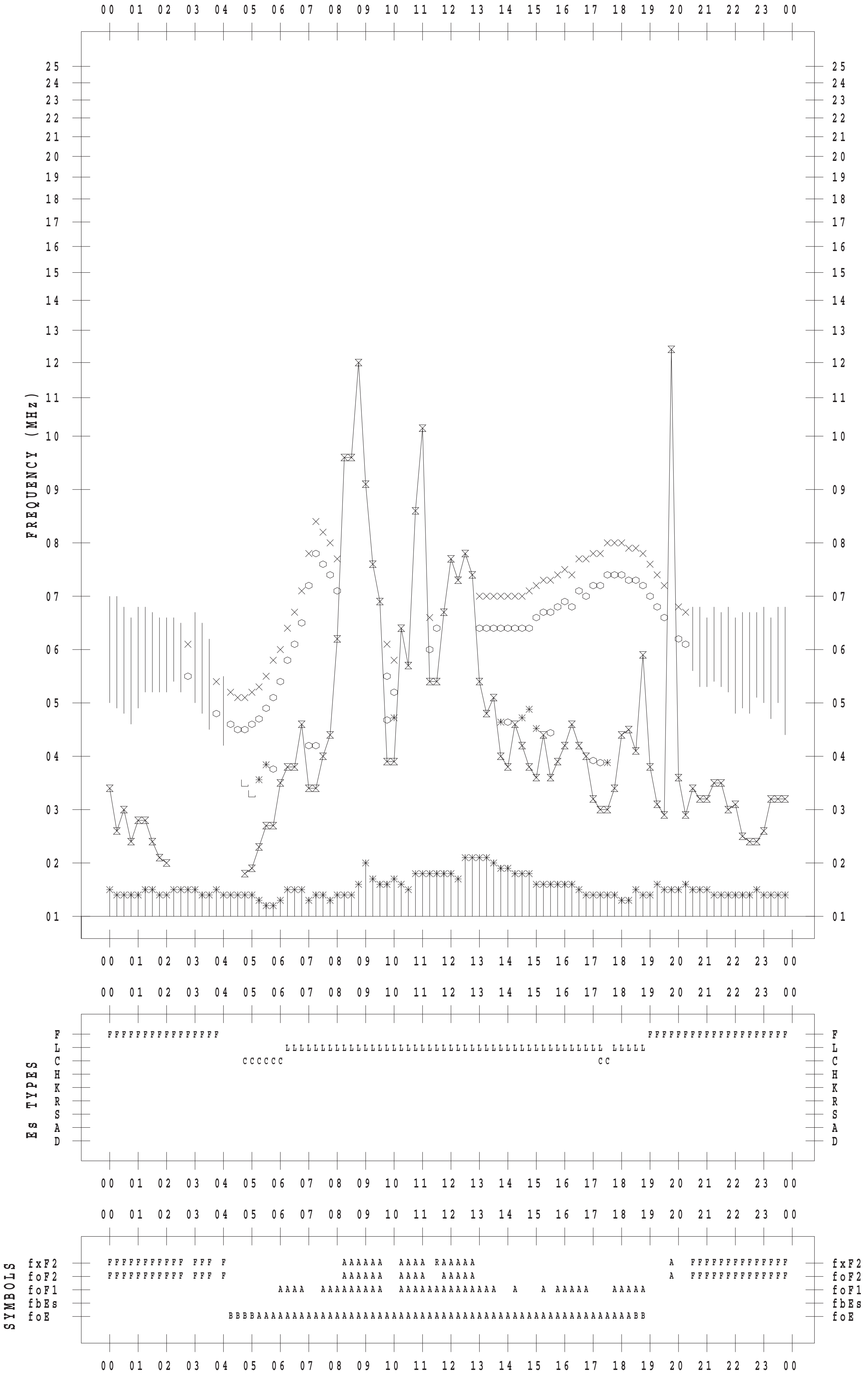
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/17

135 °E MEAN TIME



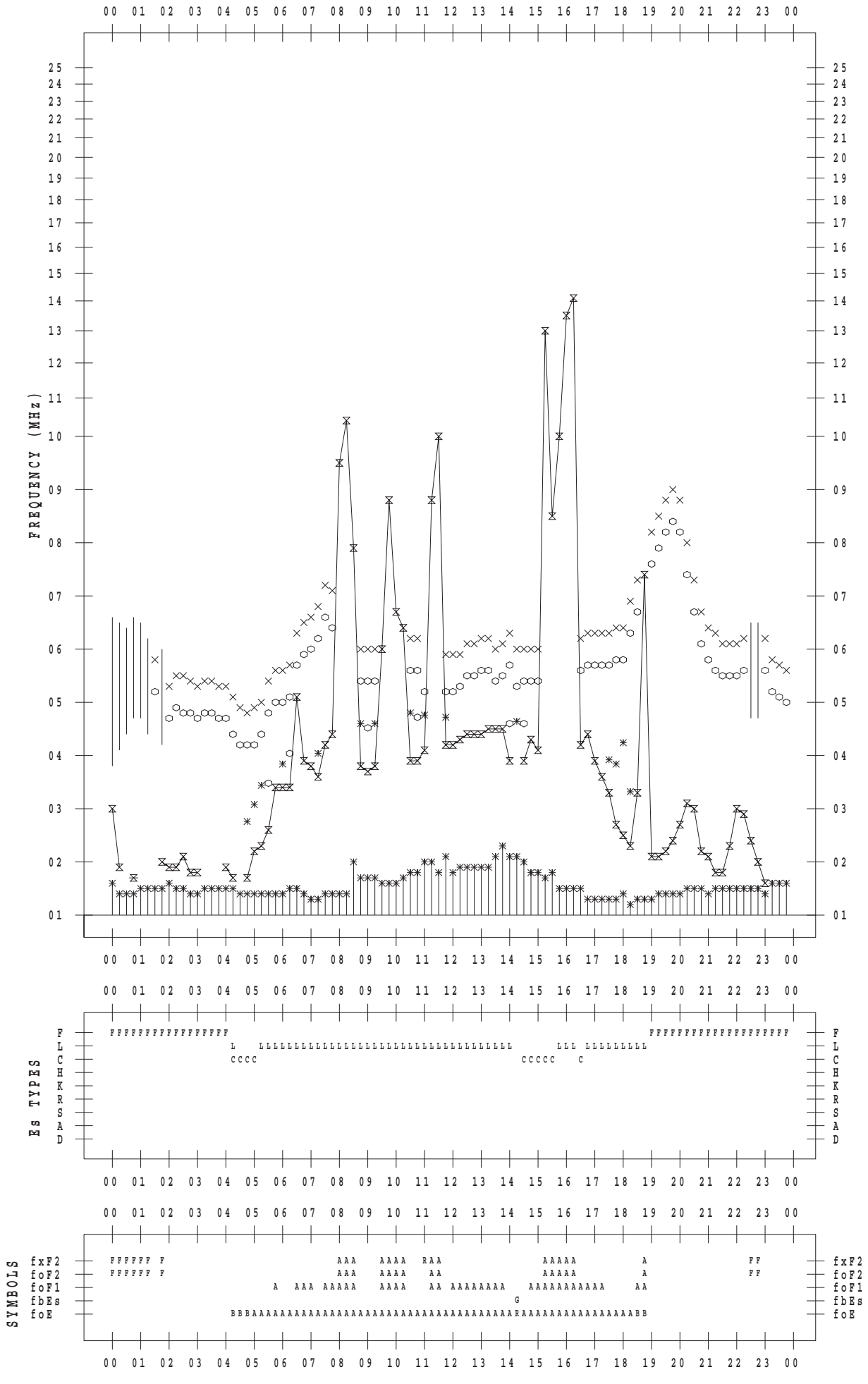
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/18

135 °E MEAN TIME



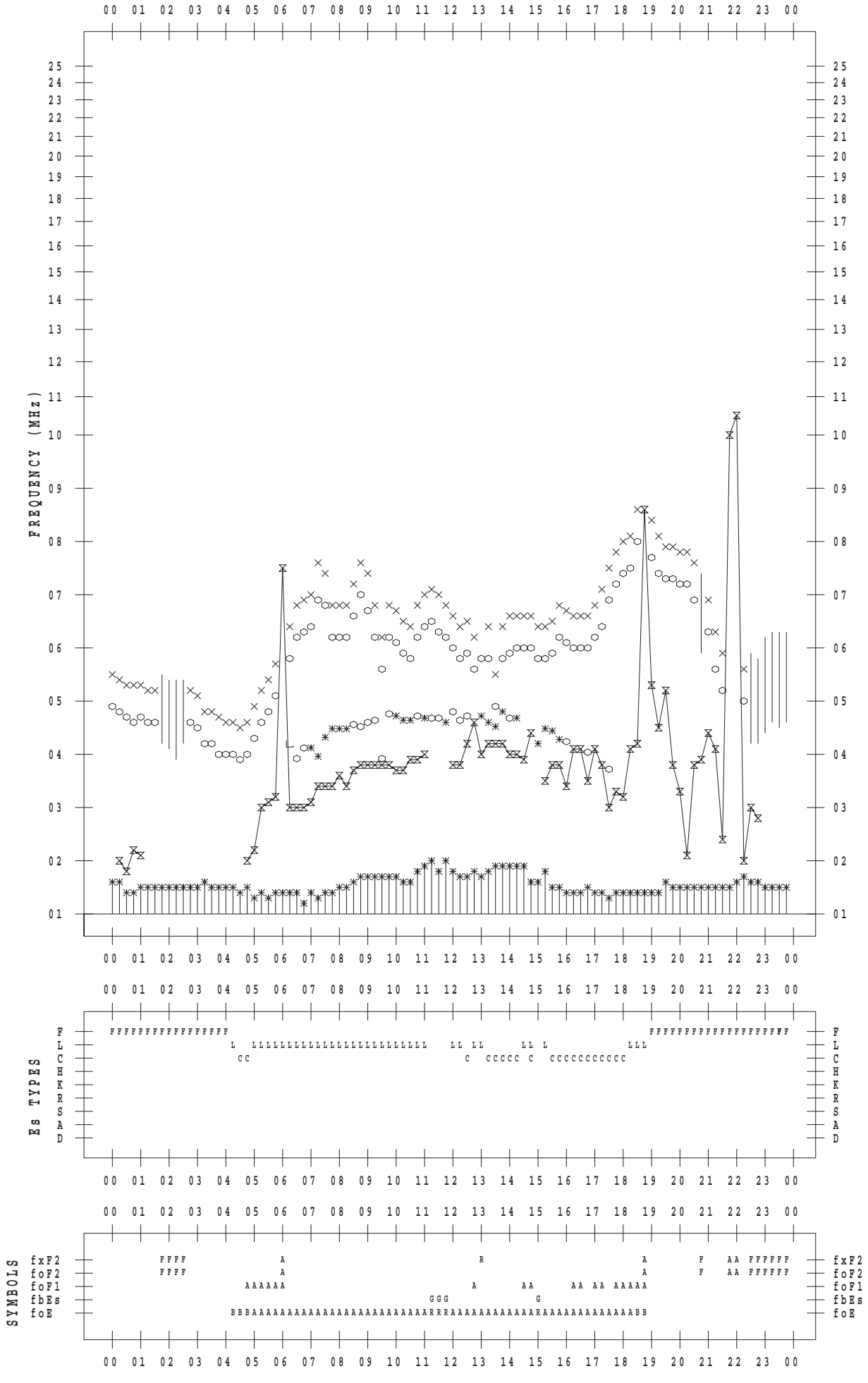
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/19

135 °E MEAN TIME



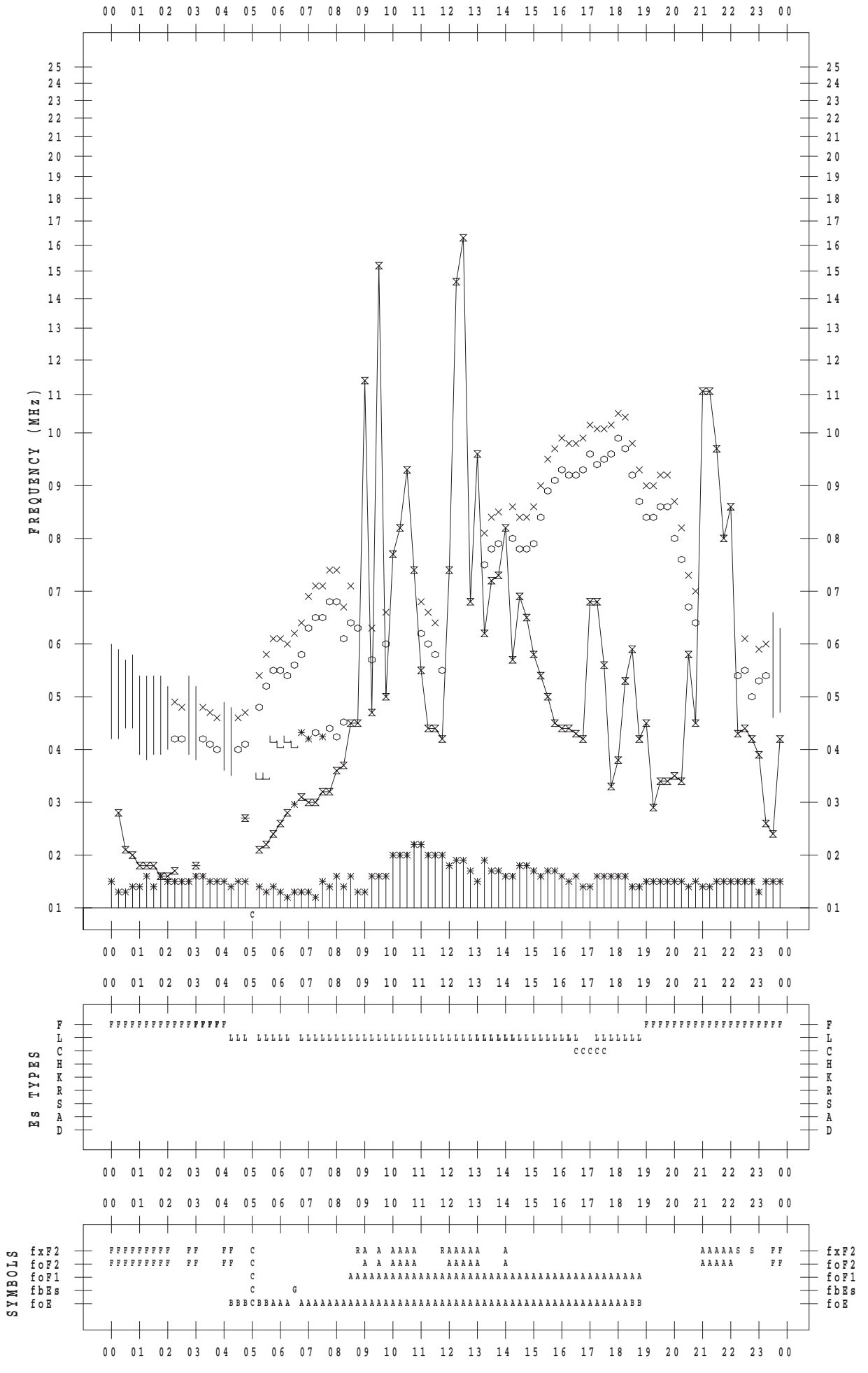
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/20

135 °E MEAN TIME



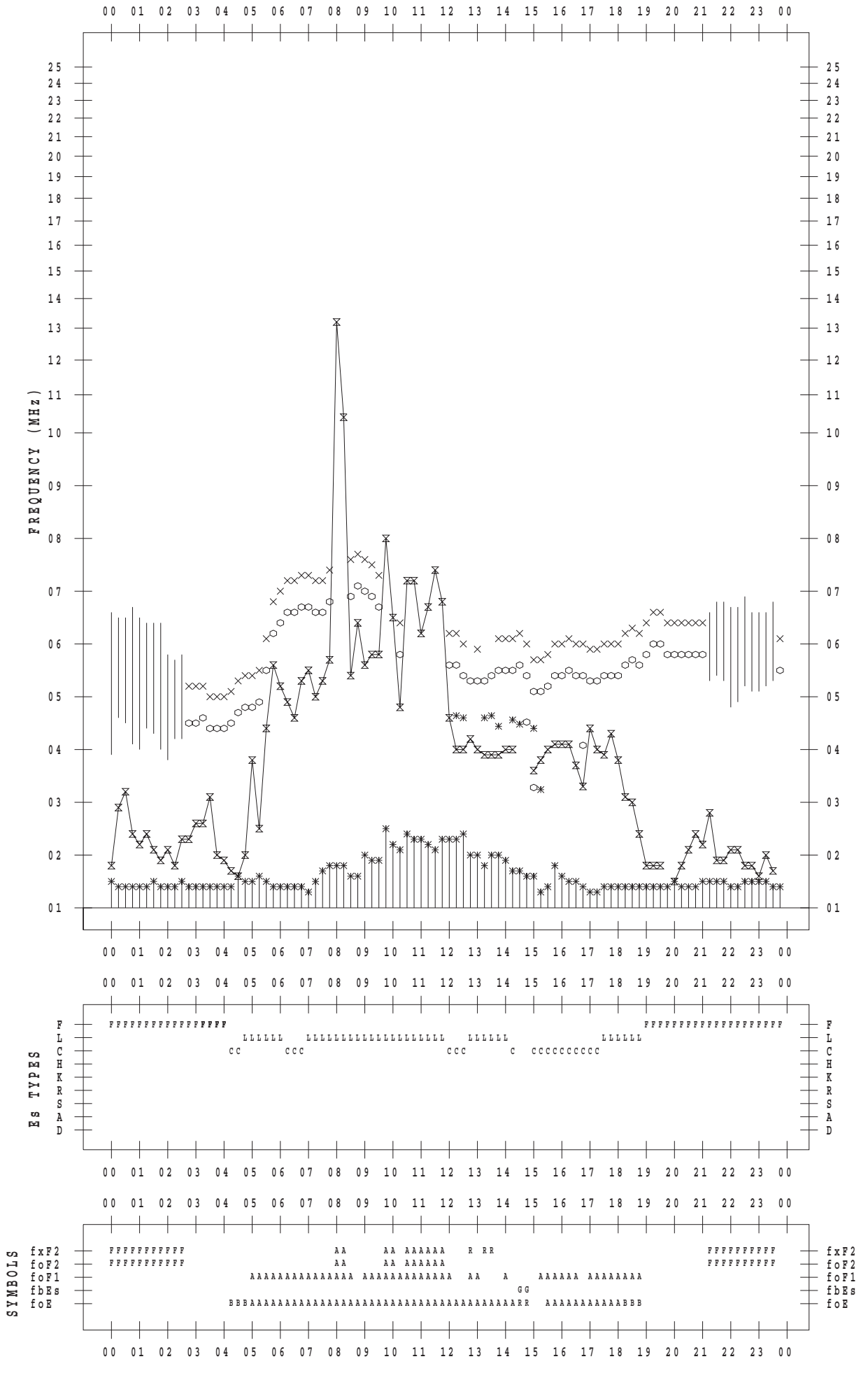
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/21

135 °E MEAN TIME



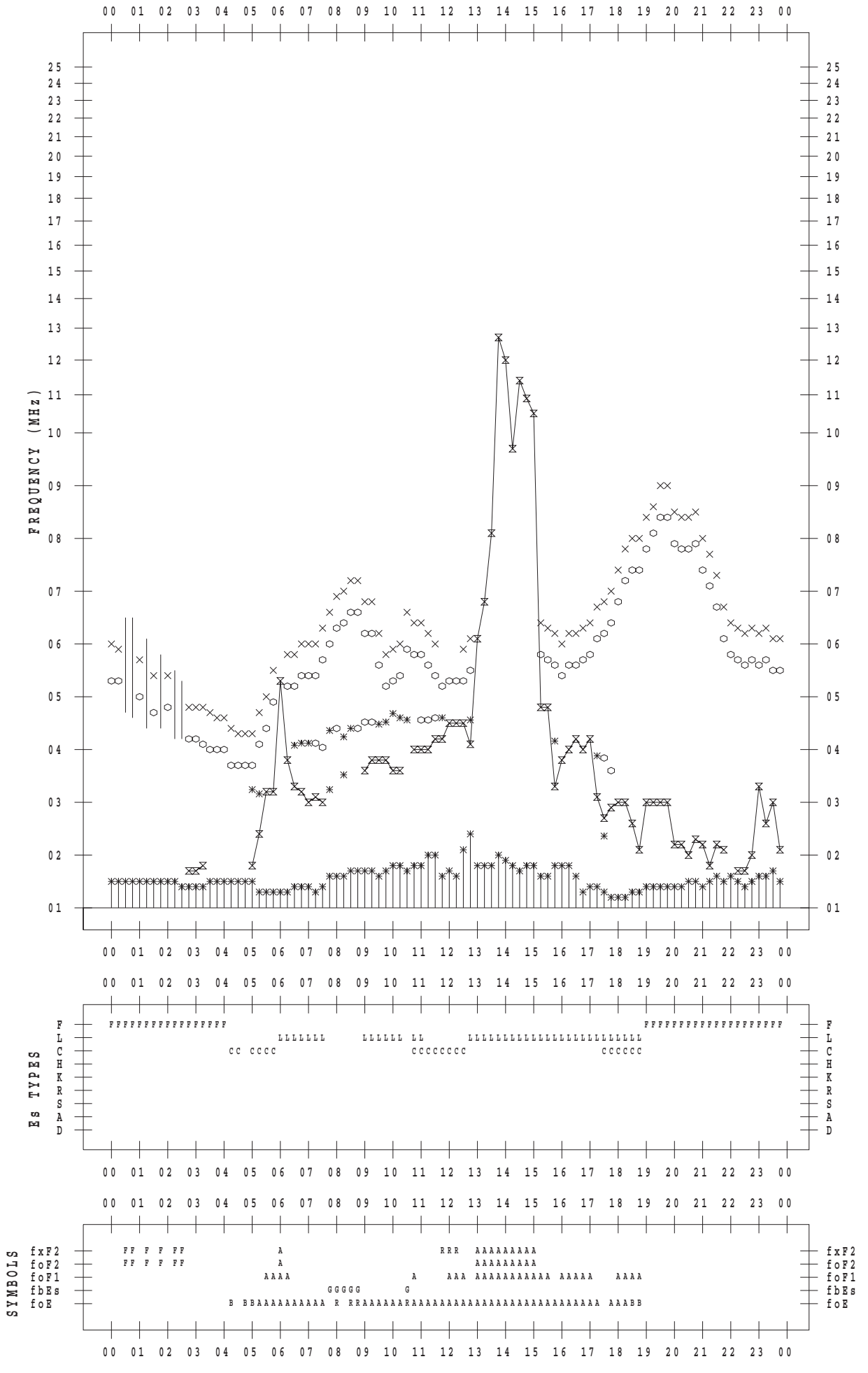
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/22

135 °E MEAN TIME



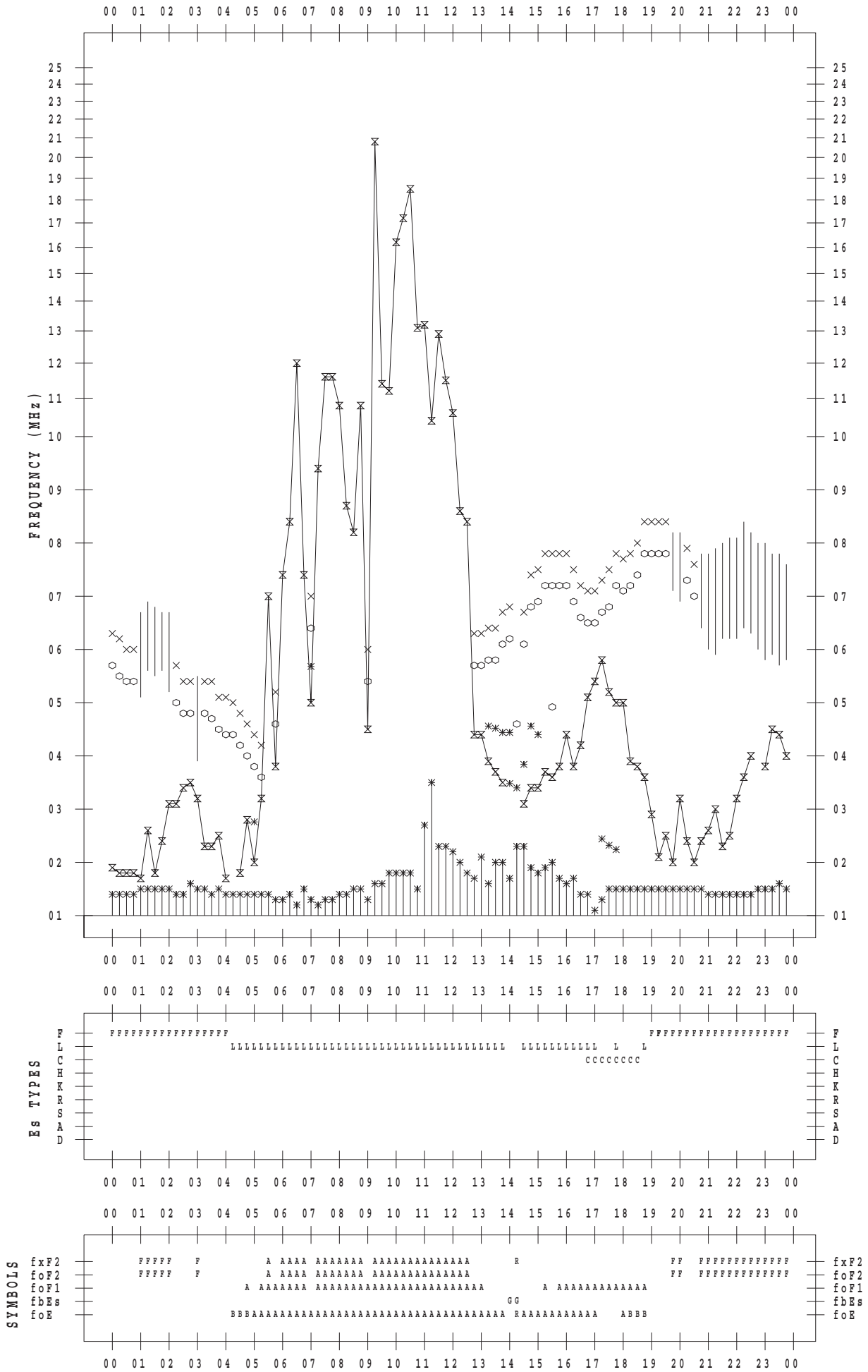
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/23

135 °E MEAN TIME



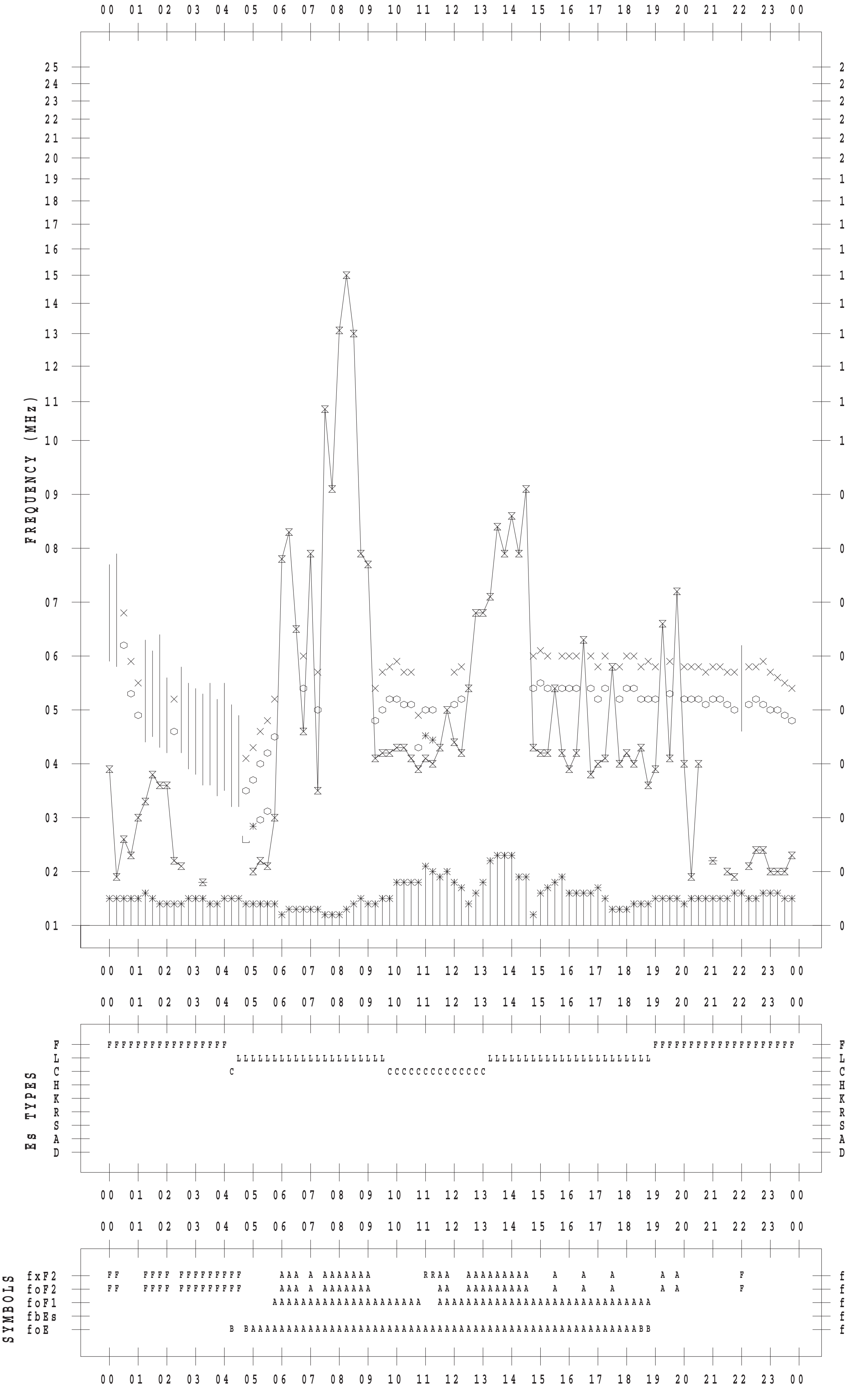
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/24

135 °E MEAN TIME



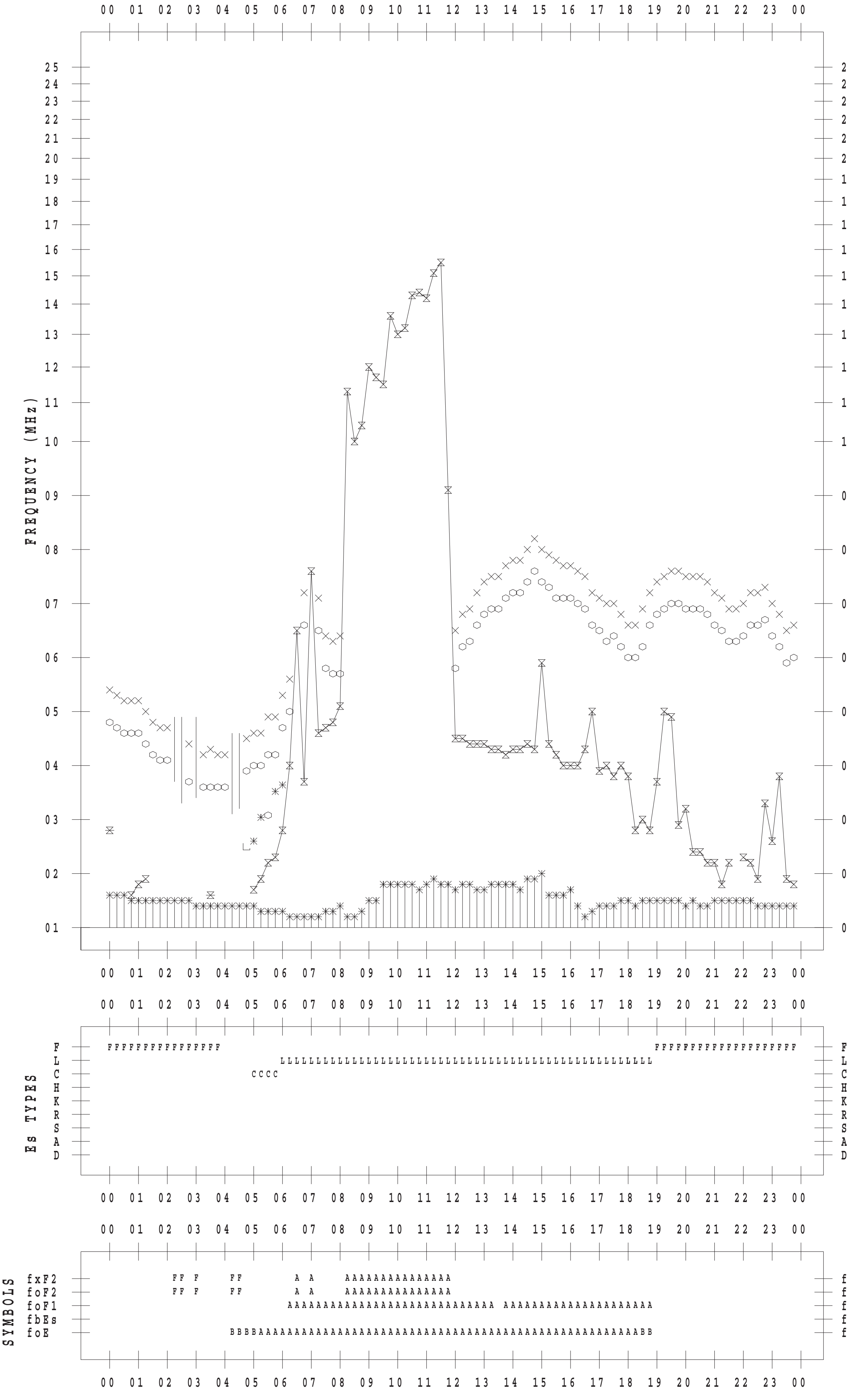
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/25

135 °E MEAN TIME



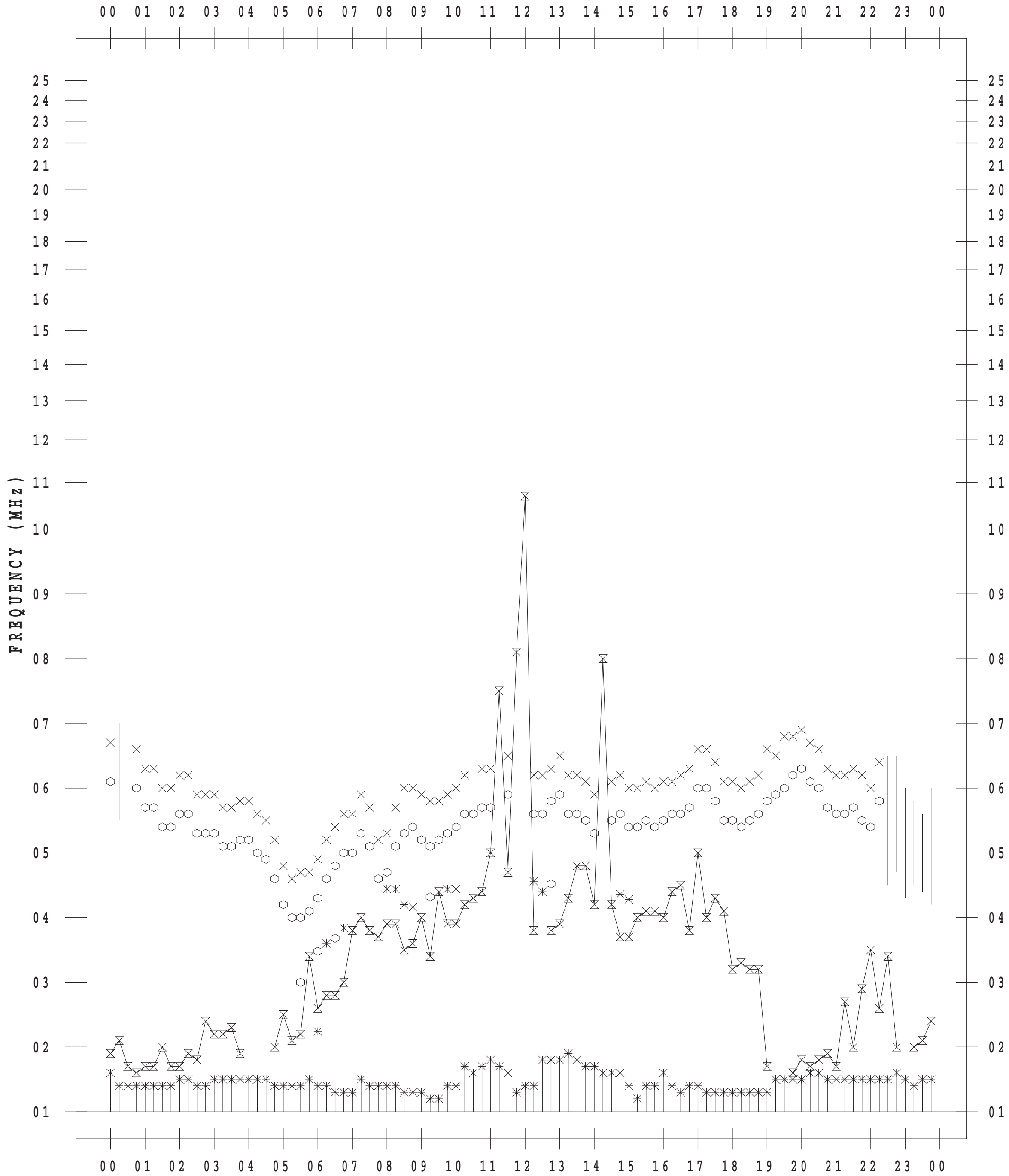
f-PLOT DATA

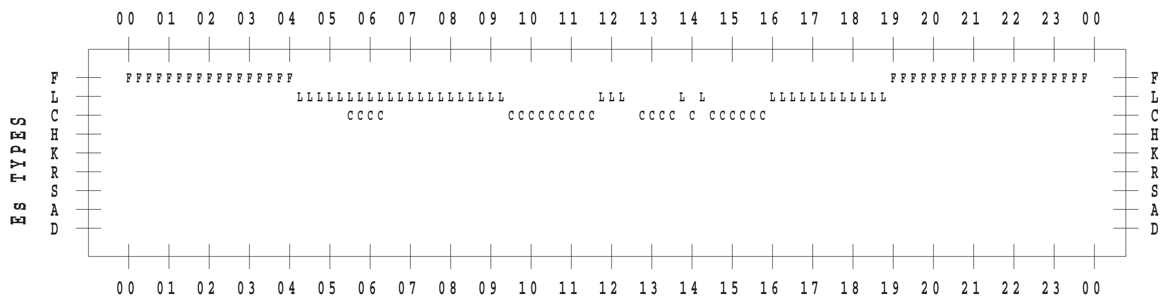
SCALER : I.NISHIMUTA

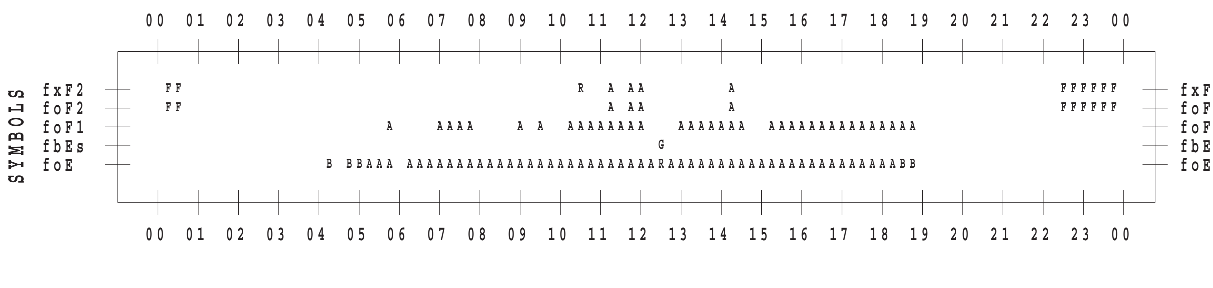
STATION : Kokubunji

DATE : 2016/ 7/26

135 °E MEAN TIME



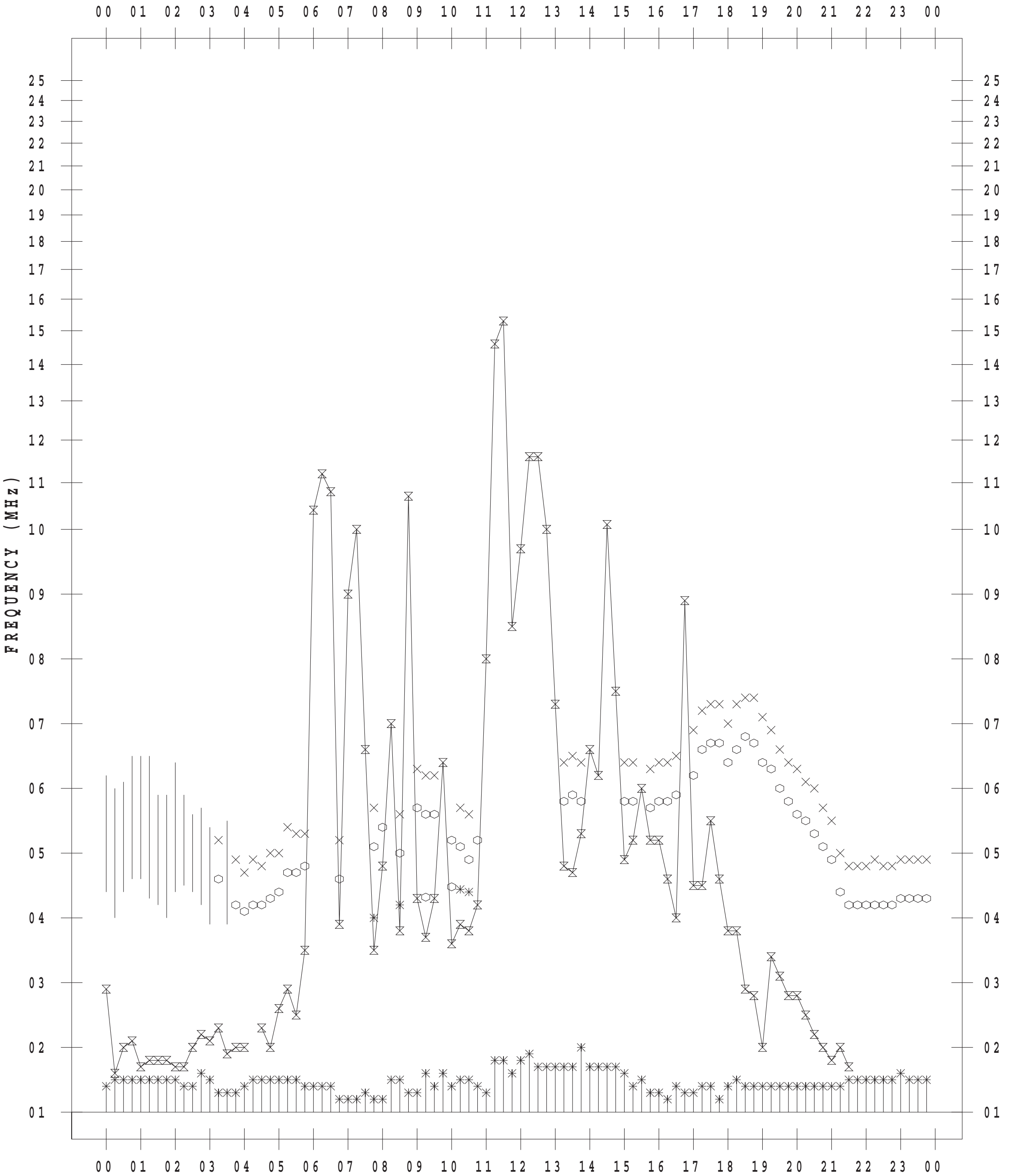


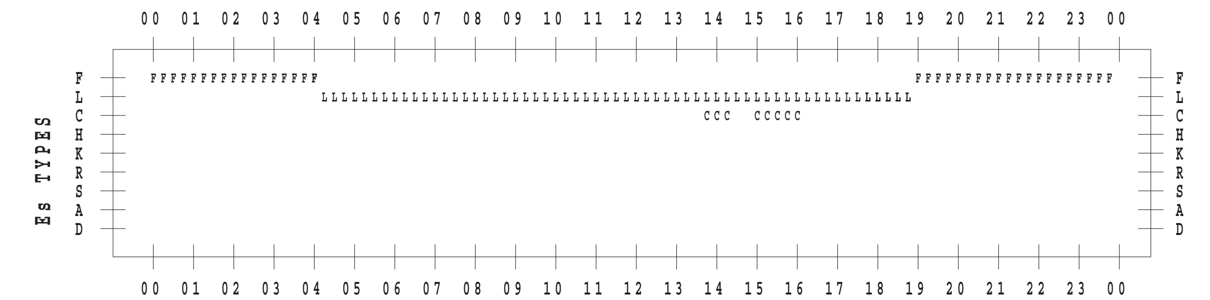


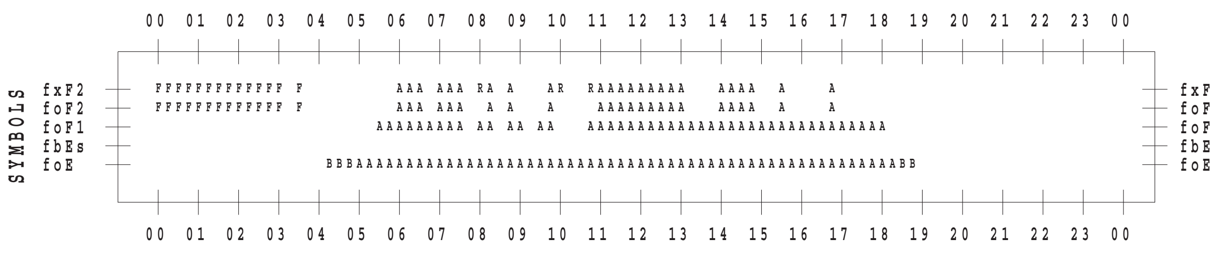
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2016/ 7/27







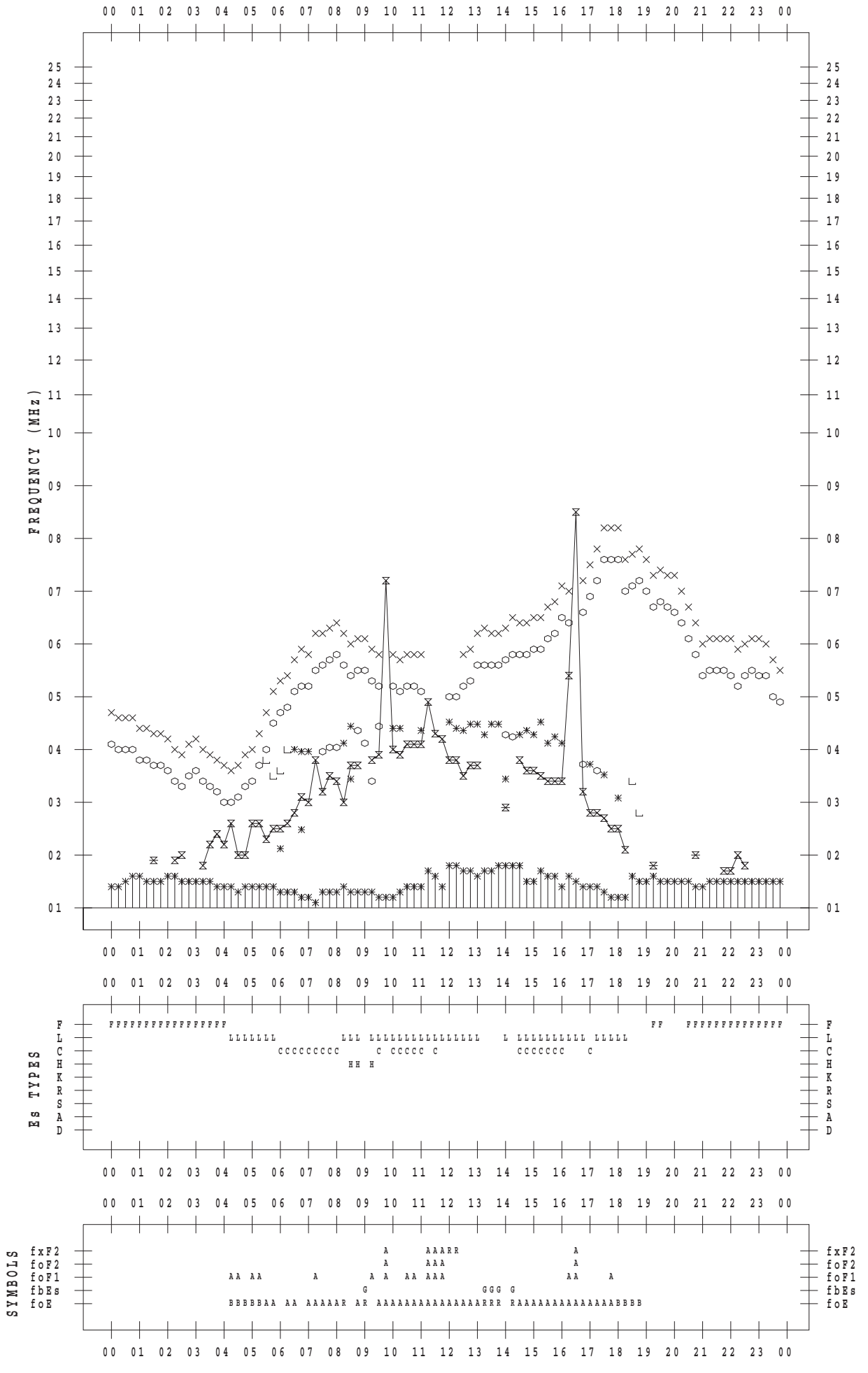
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/28

135 °E MEAN TIME



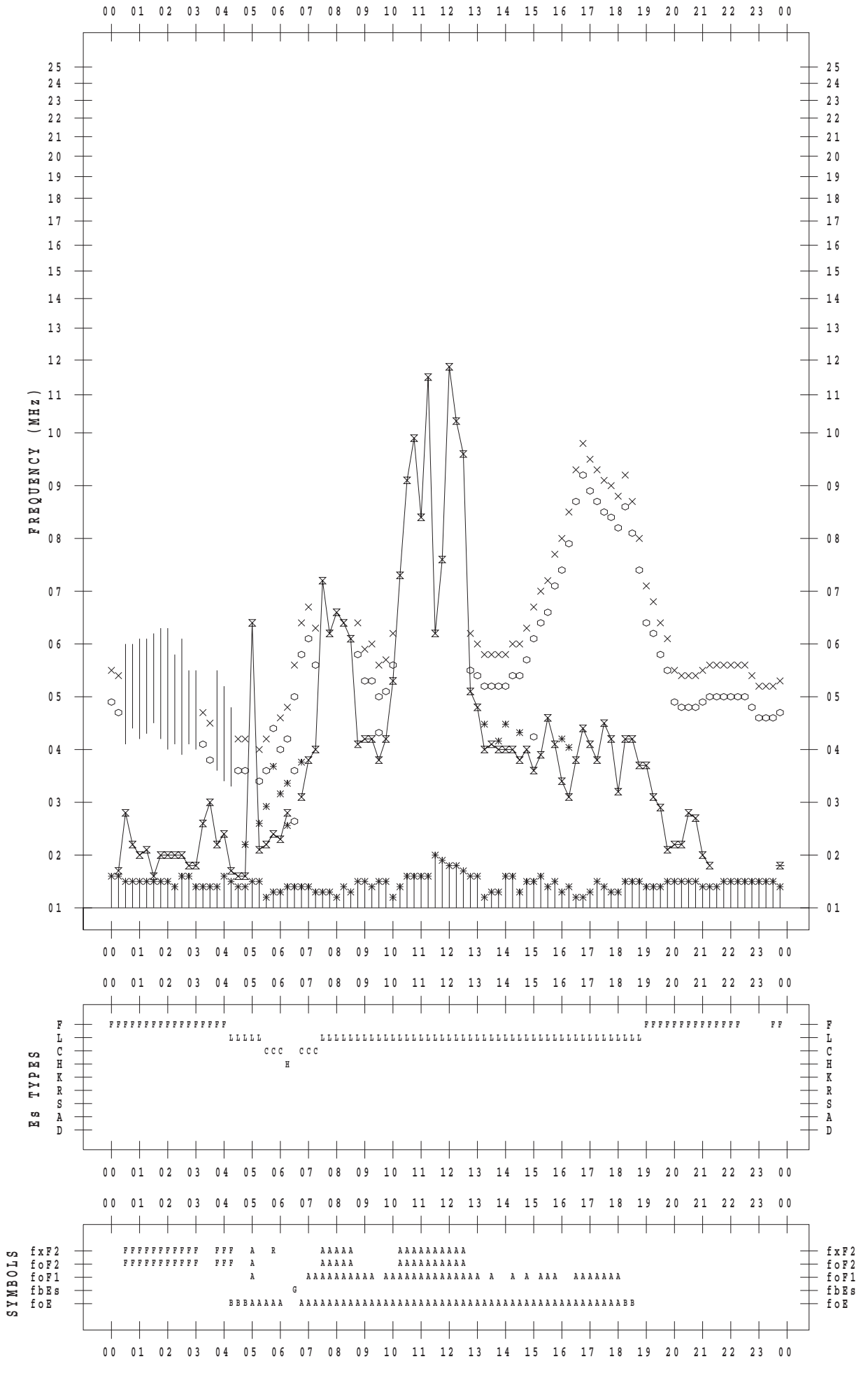
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/29

135 °E MEAN TIME



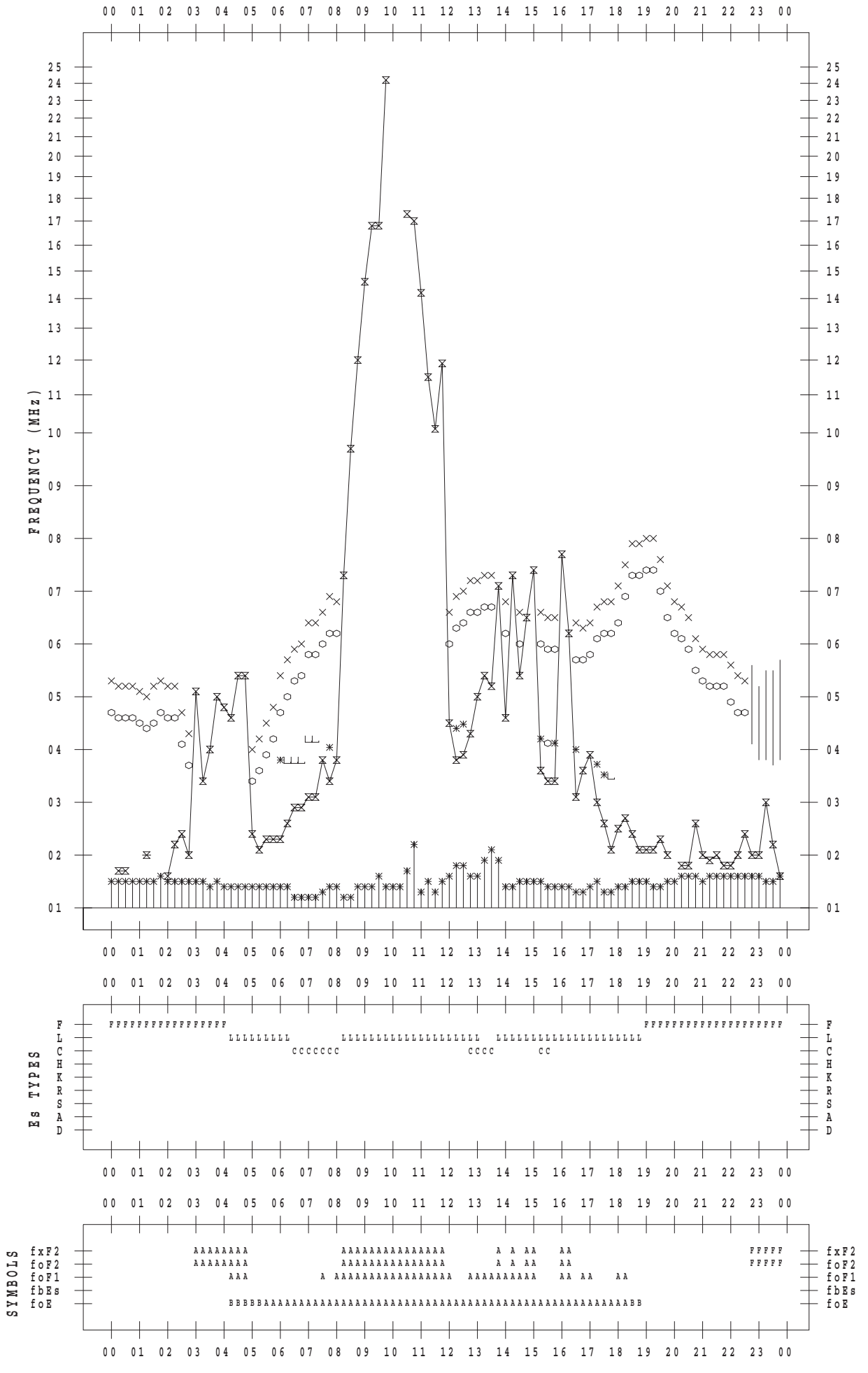
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2016/ 7/30

135 °E MEAN TIME



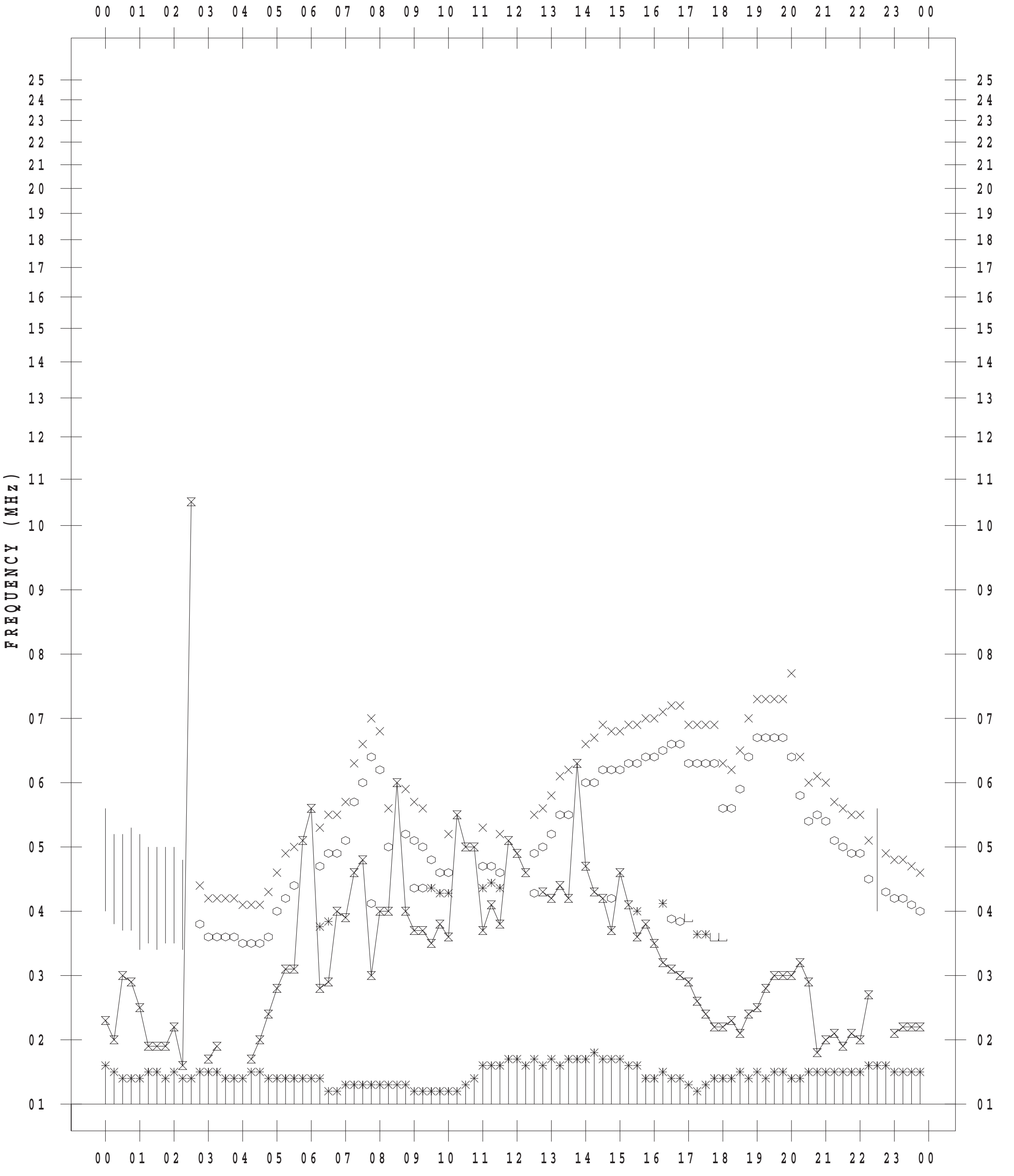
f-PLOT DATA

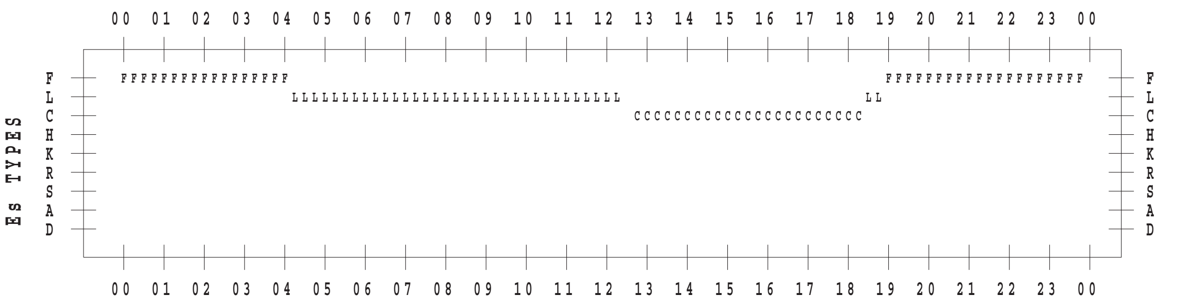
SCALER : I.NISHIMUTA

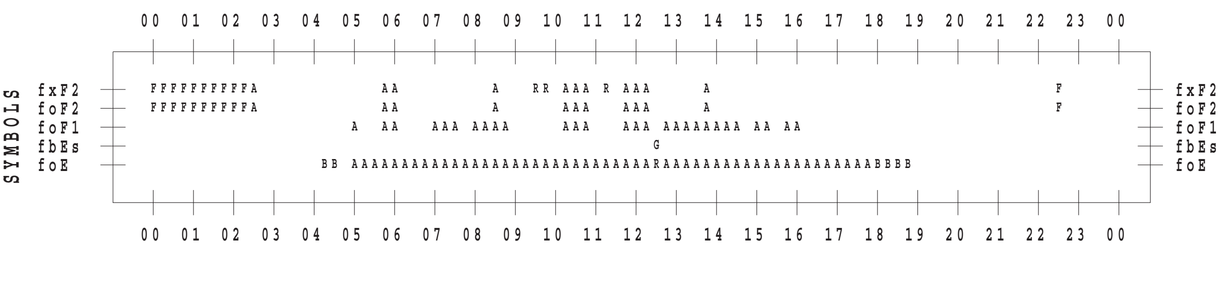
STATION : Kokubunji

DATE : 2016/ 7/31

135 °E MEAN TIME







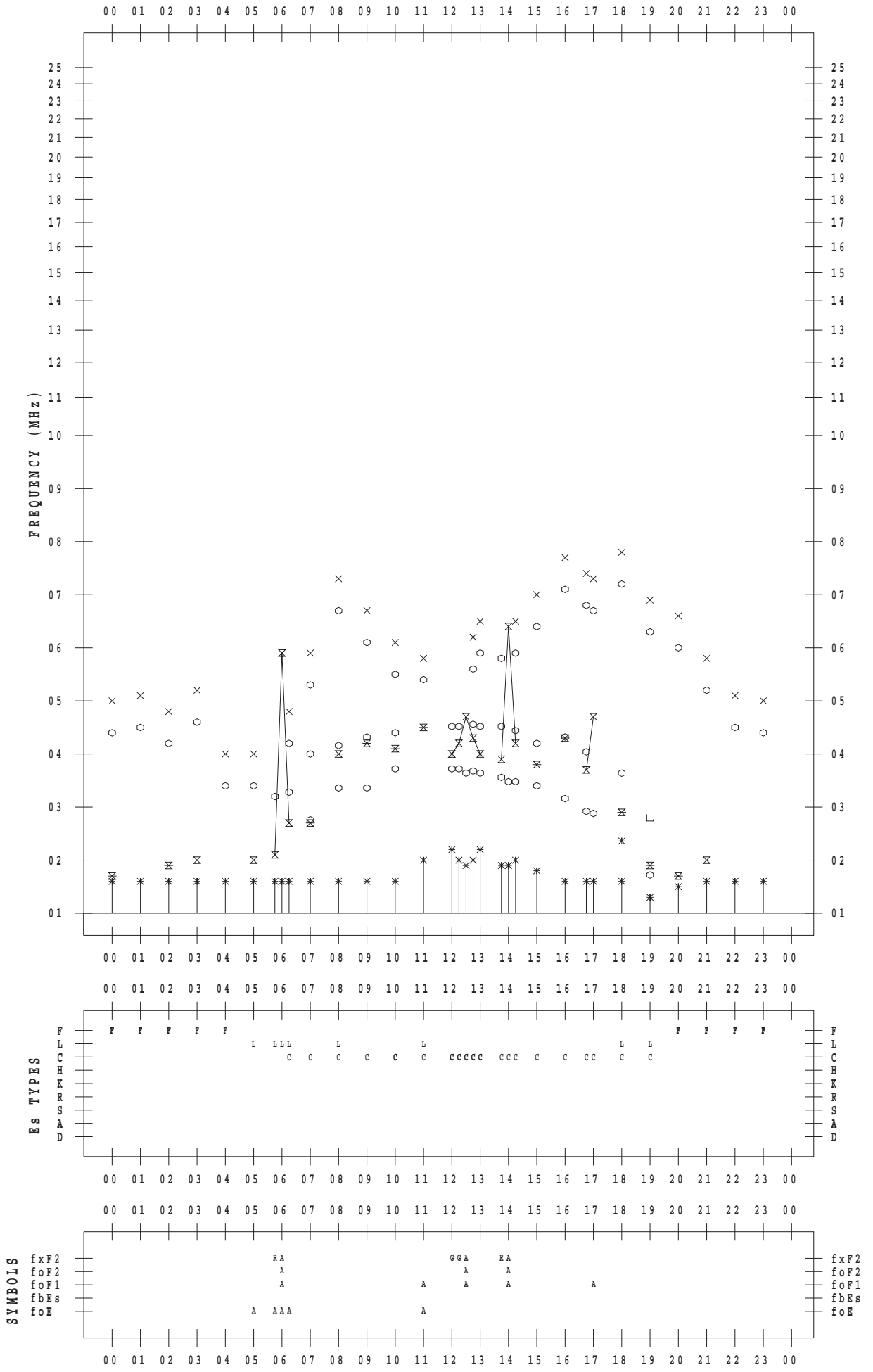
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 1

135 °E MEAN TIME



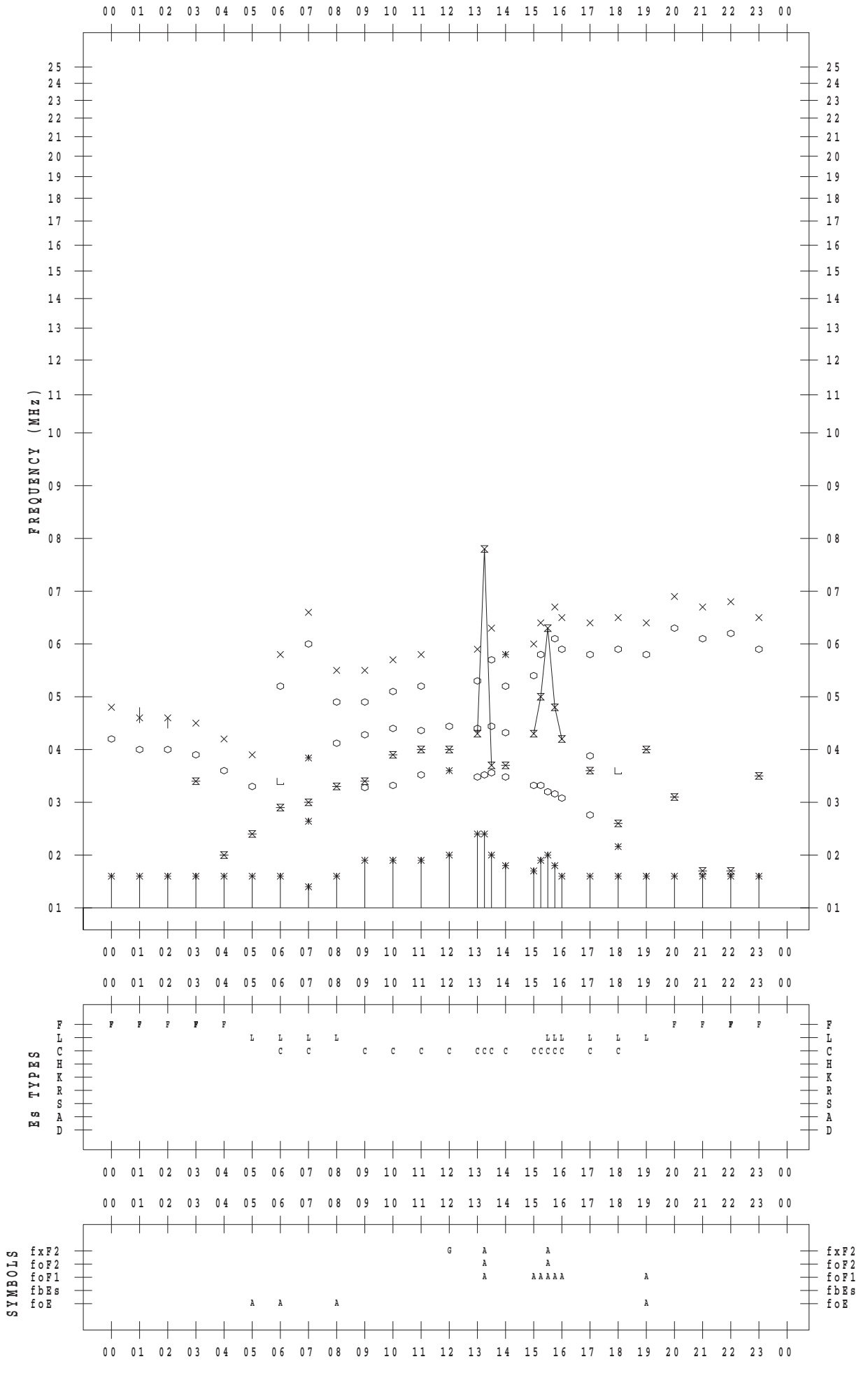
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 2

135 °E MEAN TIME



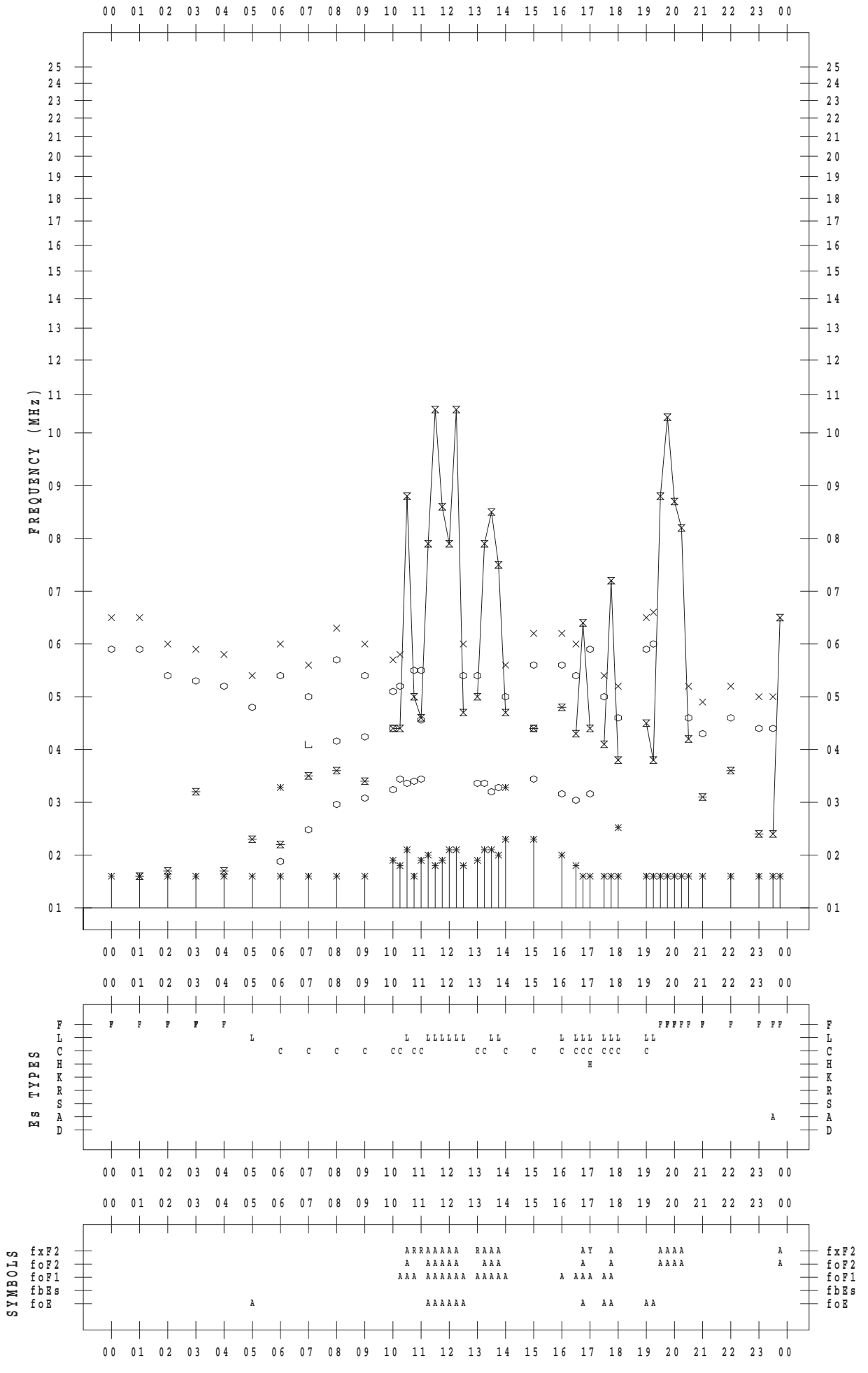
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 3

135 °E MEAN TIME



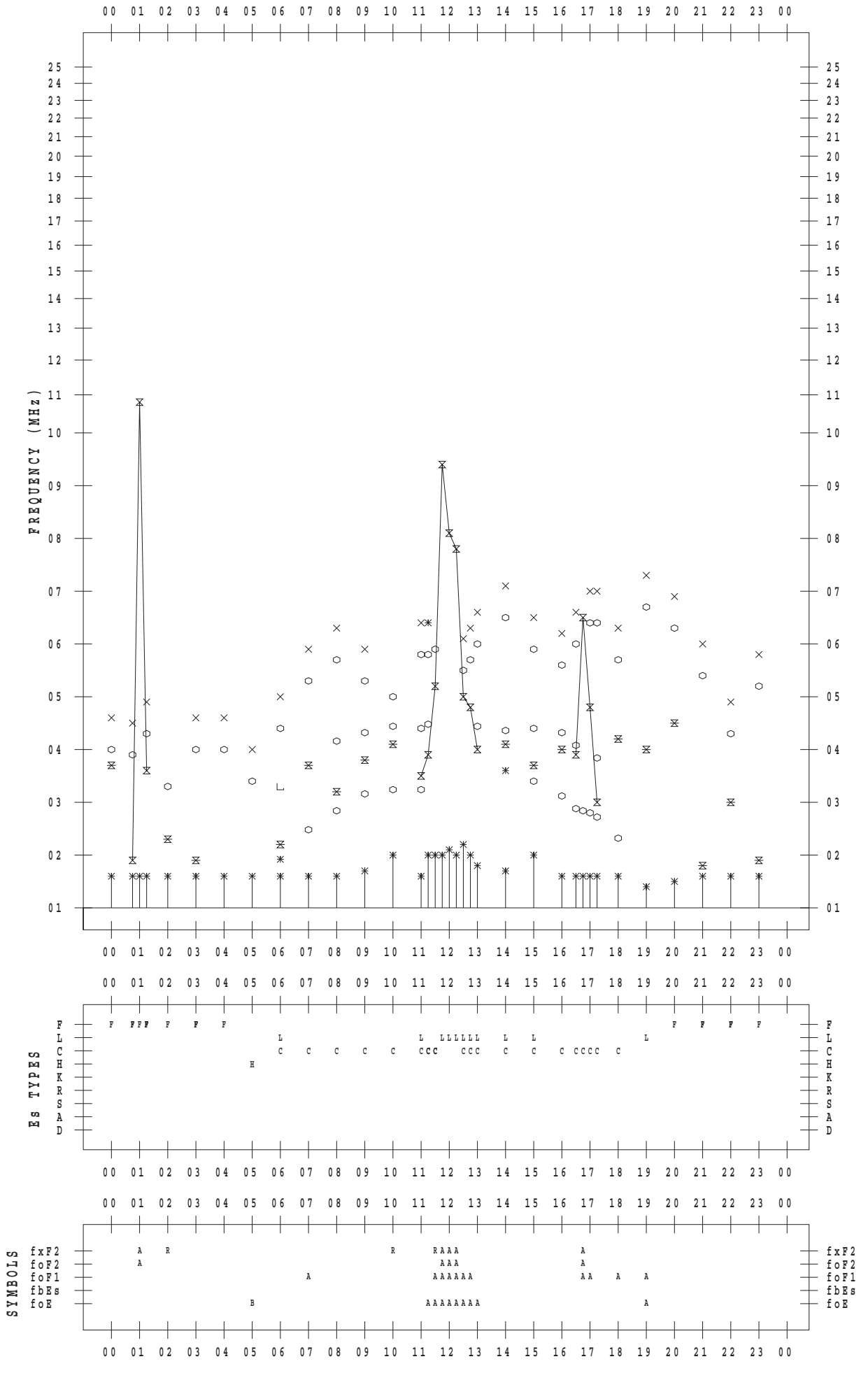
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 4

135 °E MEAN TIME



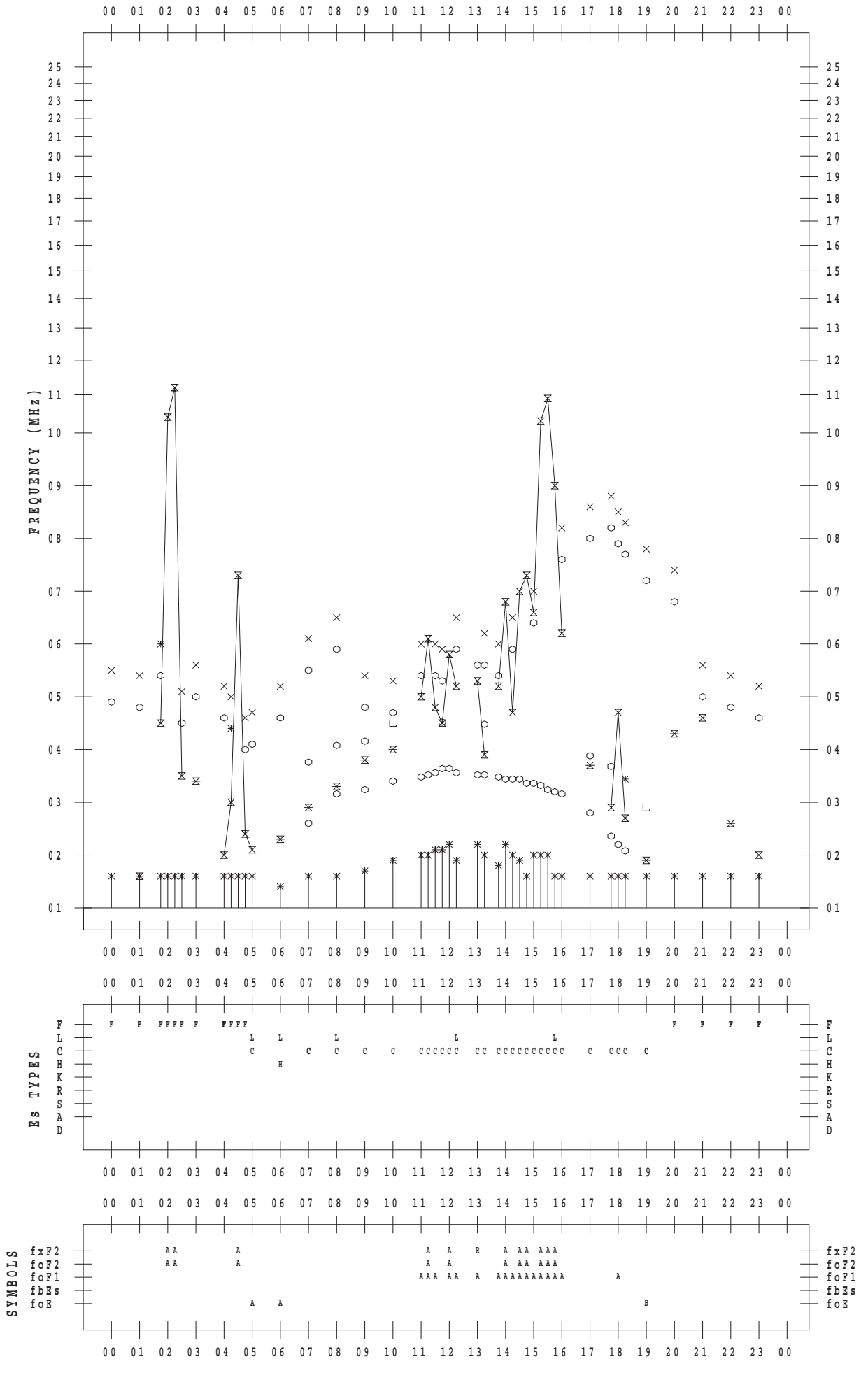
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 5

135 °E MEAN TIME



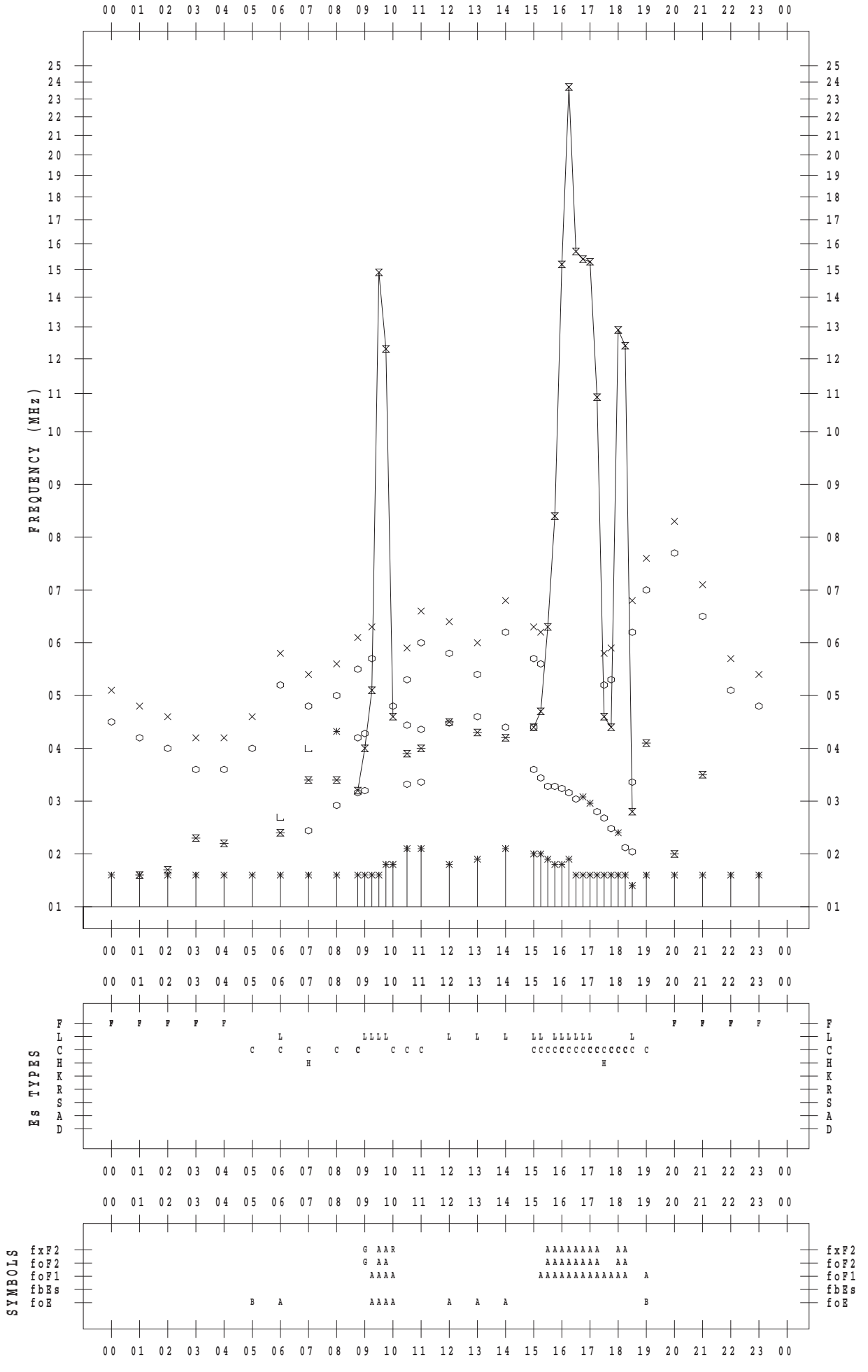
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 6

135 °E MEAN TIME



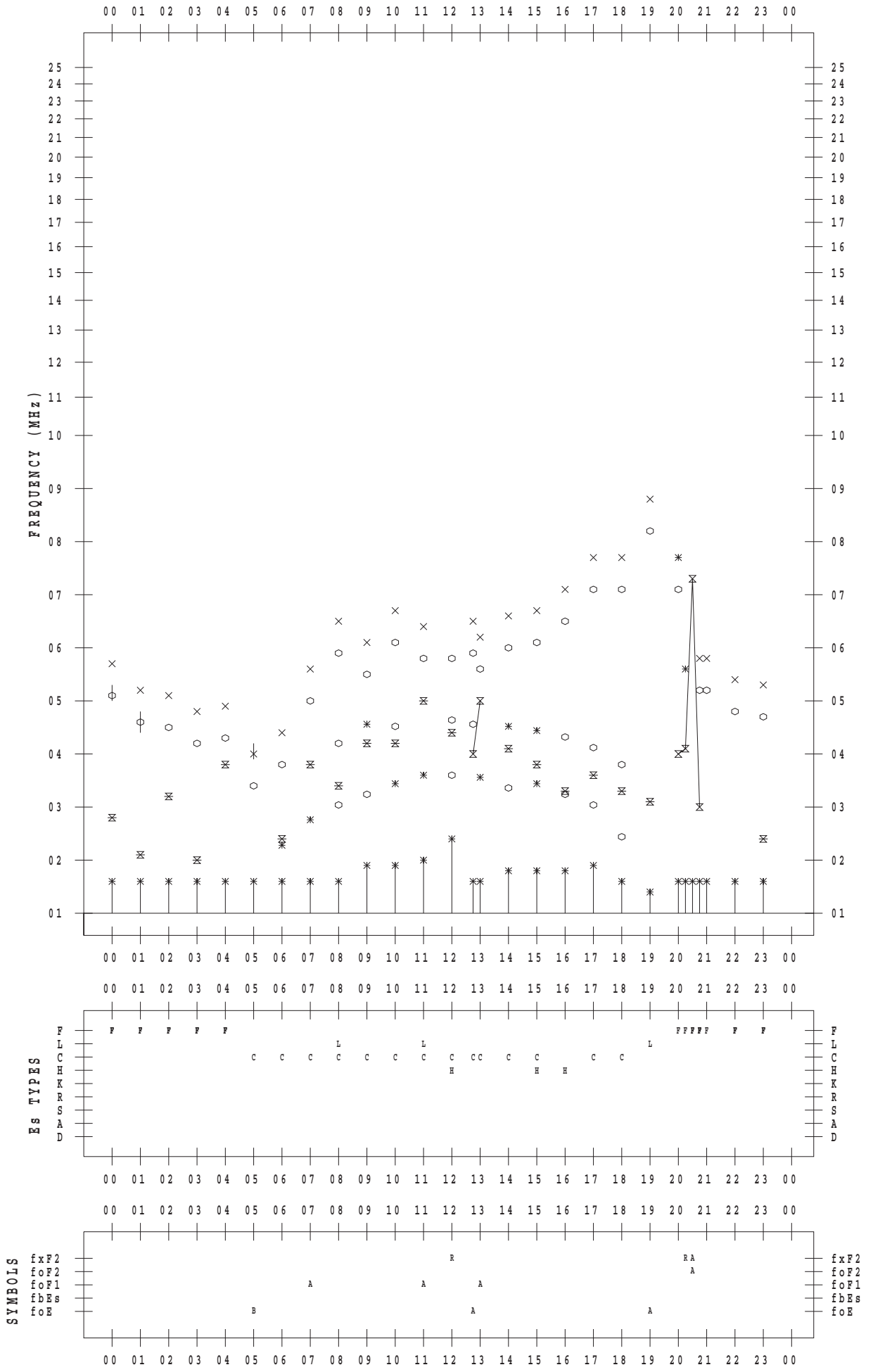
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 7

135 °E MEAN TIME



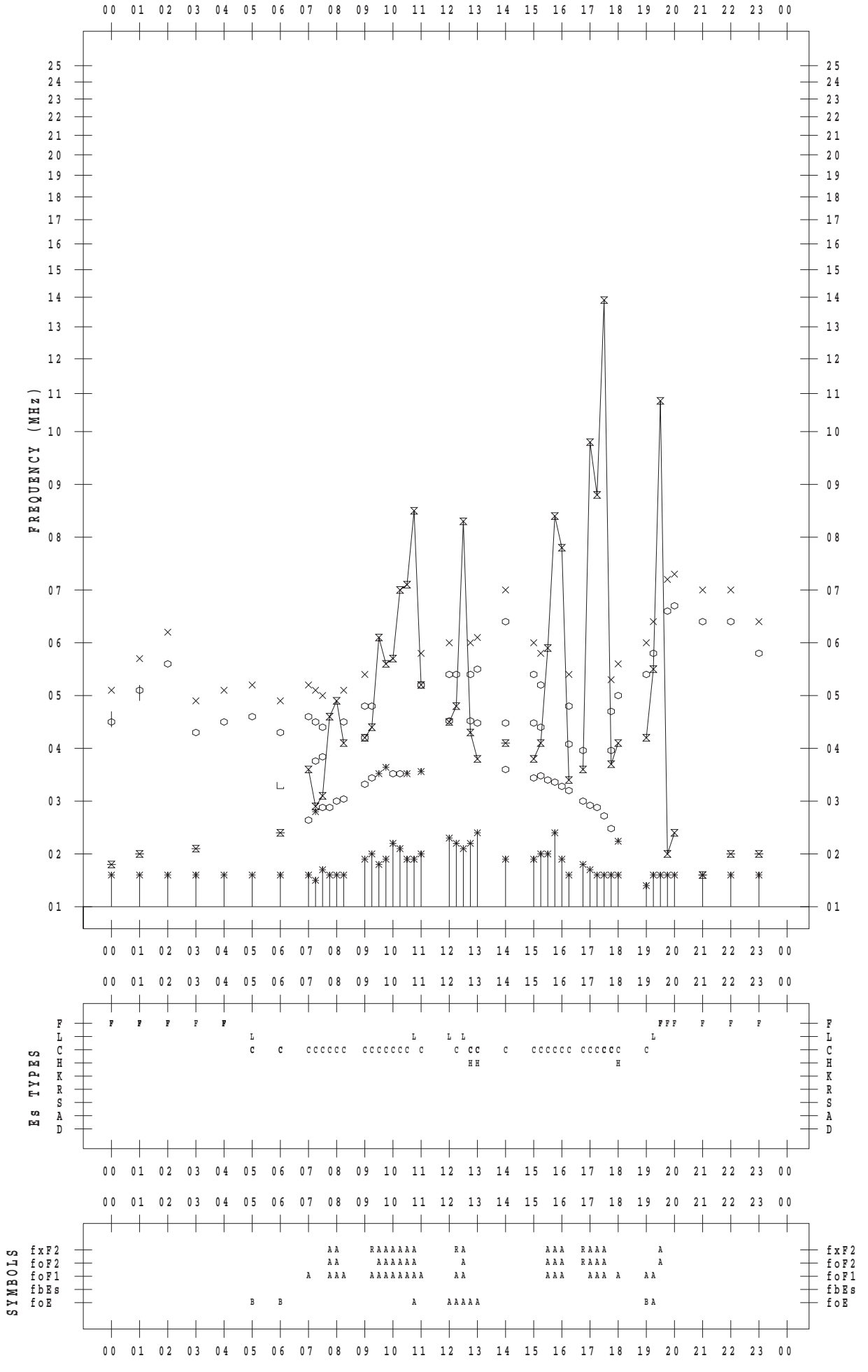
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 8

135 °E MEAN TIME



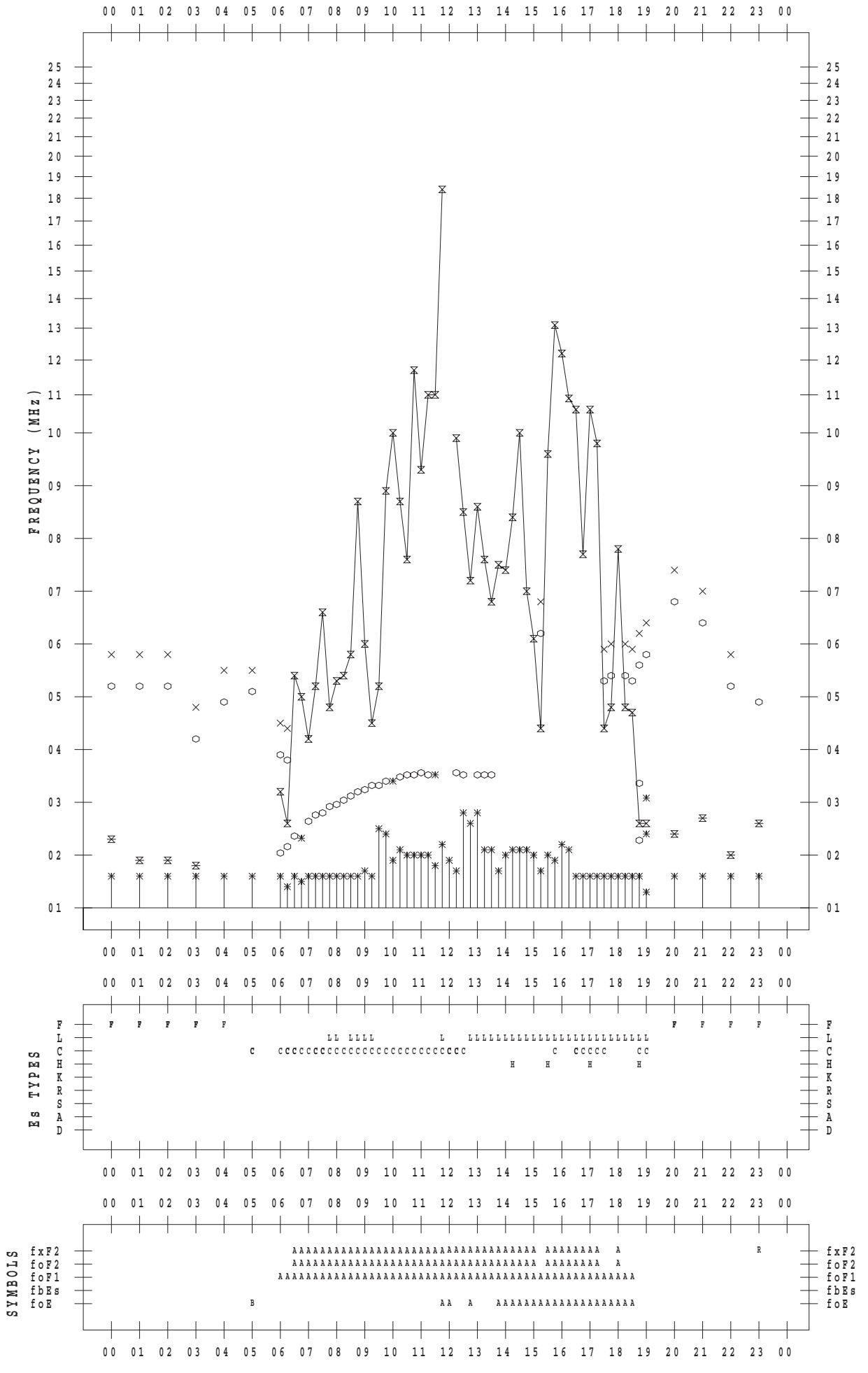
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/ 9

135 °E MEAN TIME



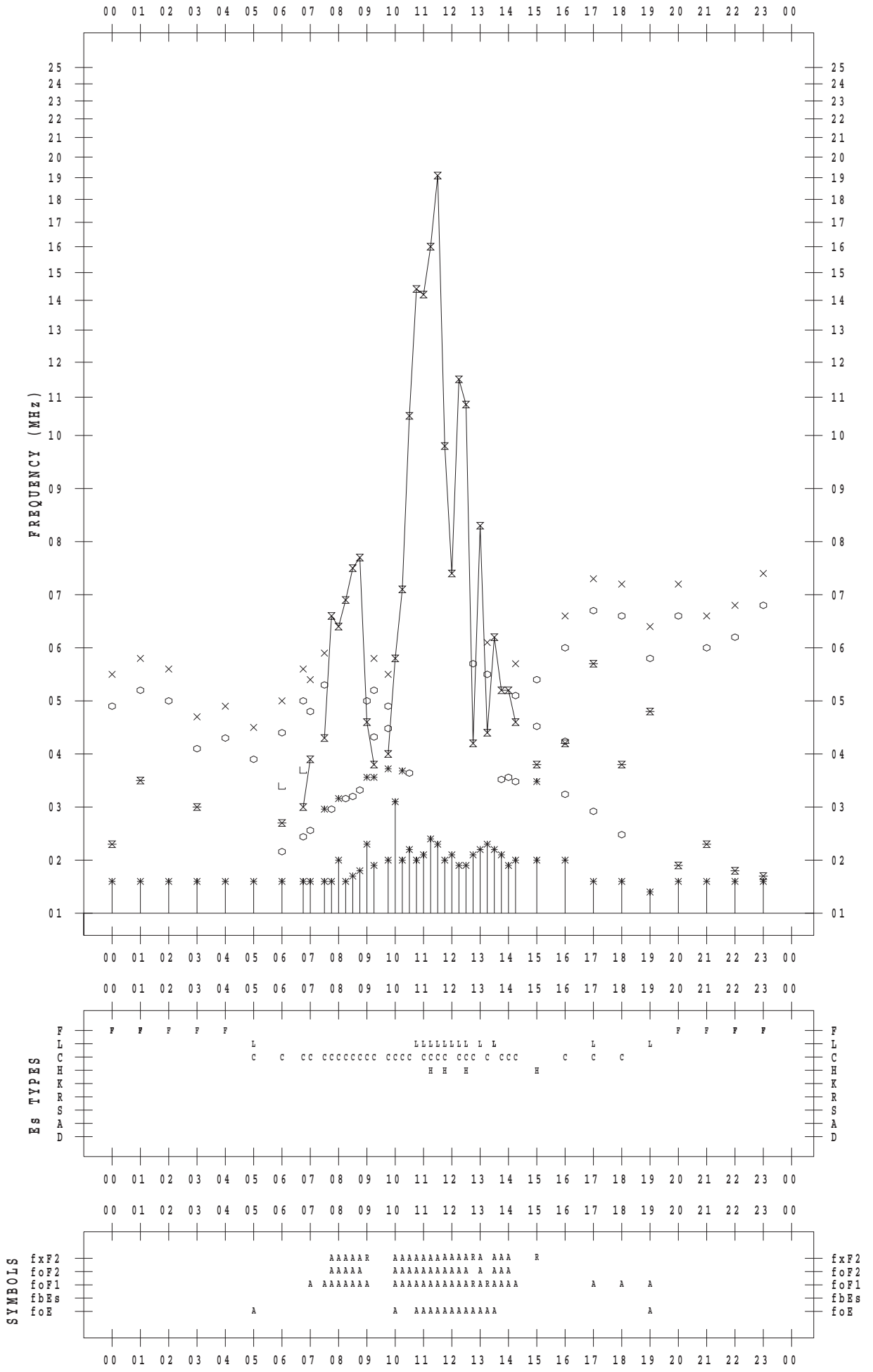
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/10

135 °E MEAN TIME



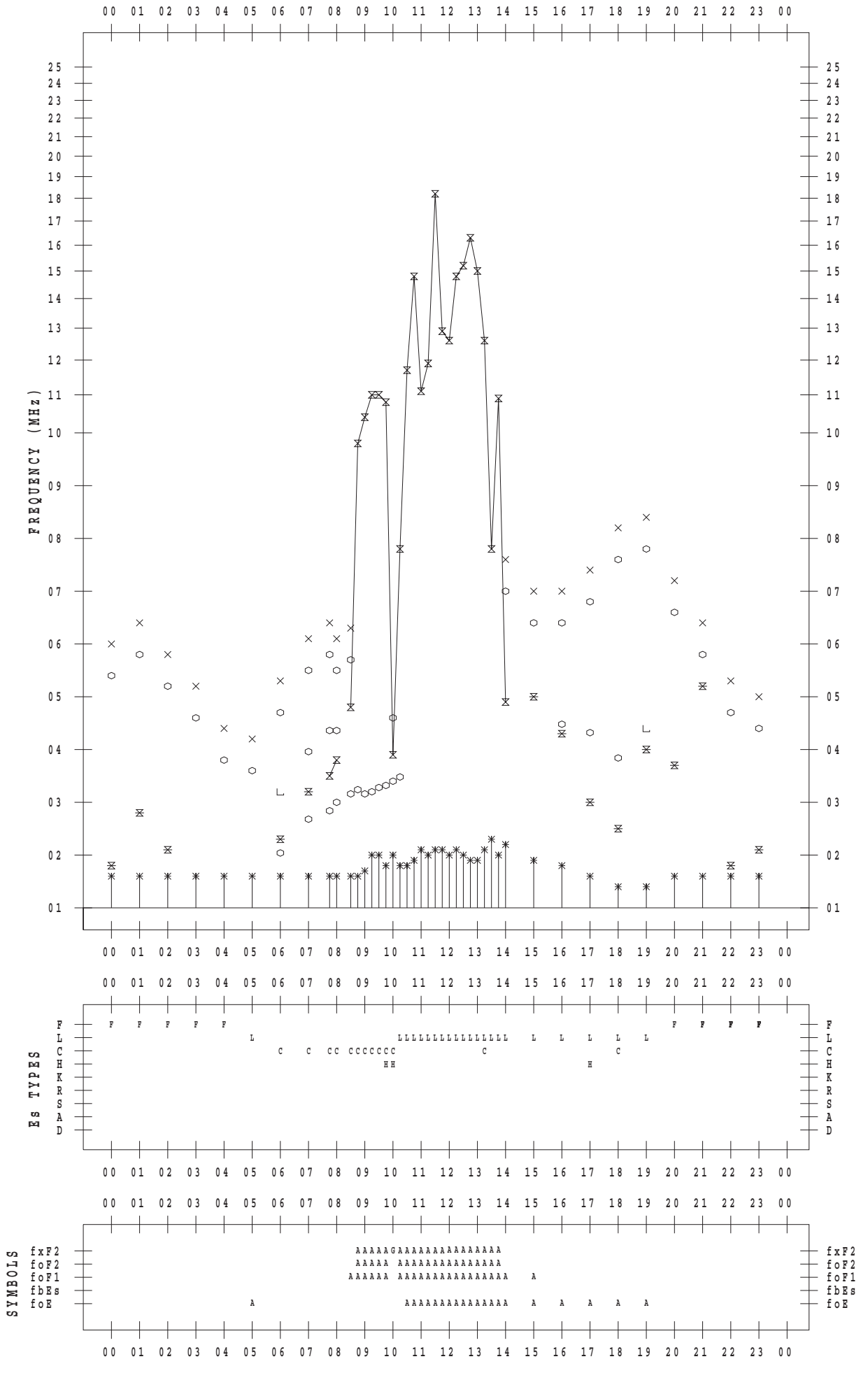
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/11

135 °E MEAN TIME



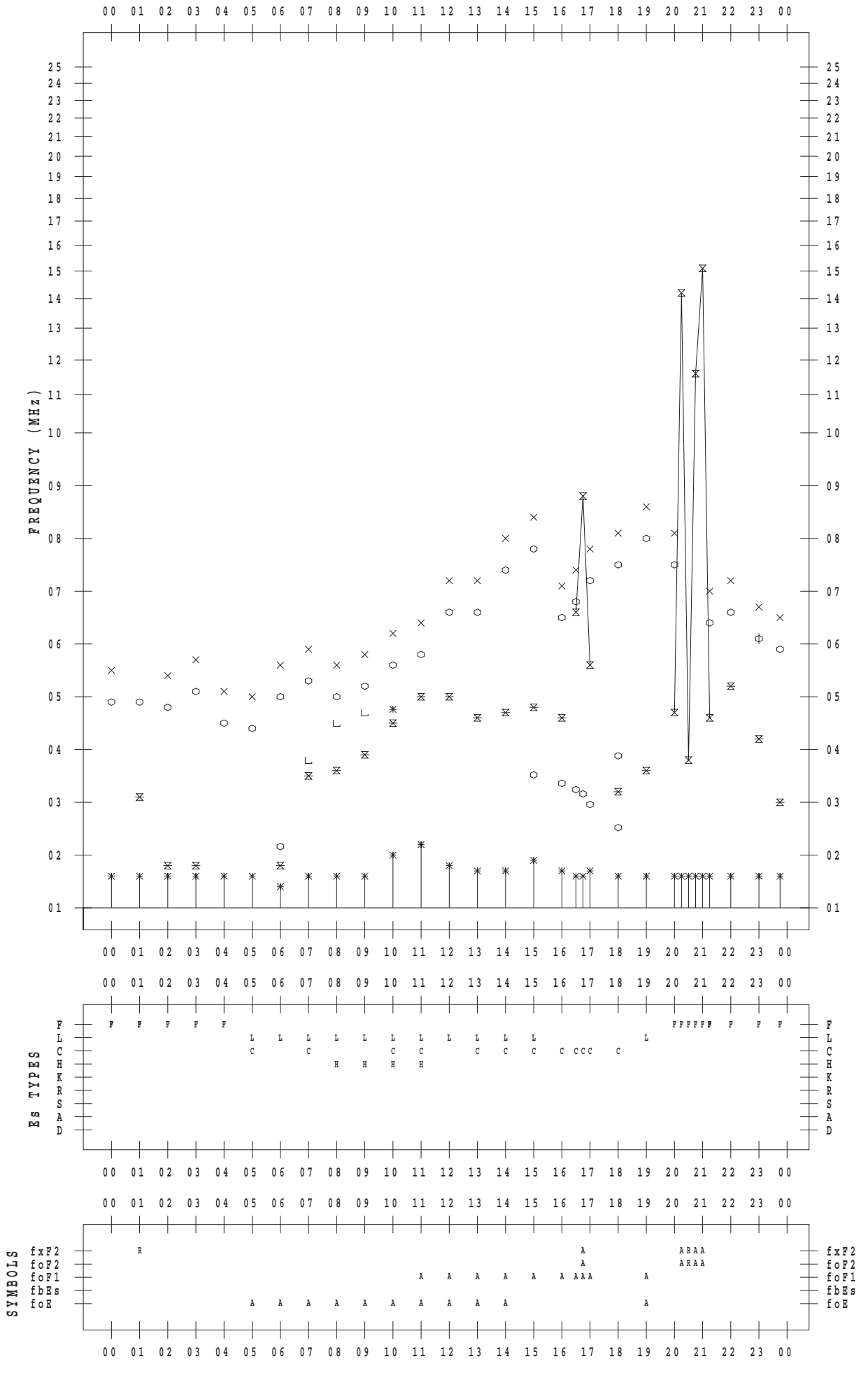
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/12

135 °E MEAN TIME



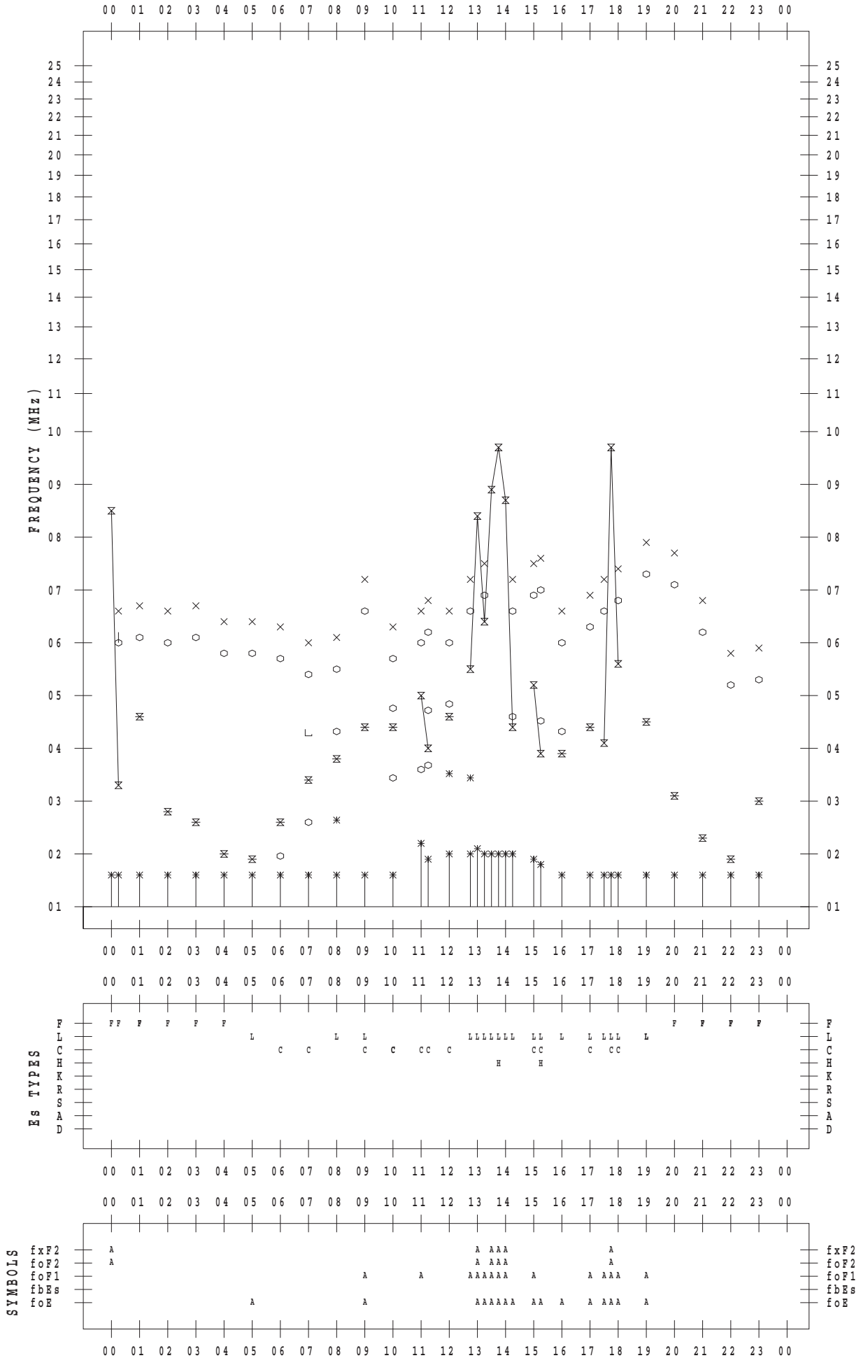
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/13

135 °E MEAN TIME



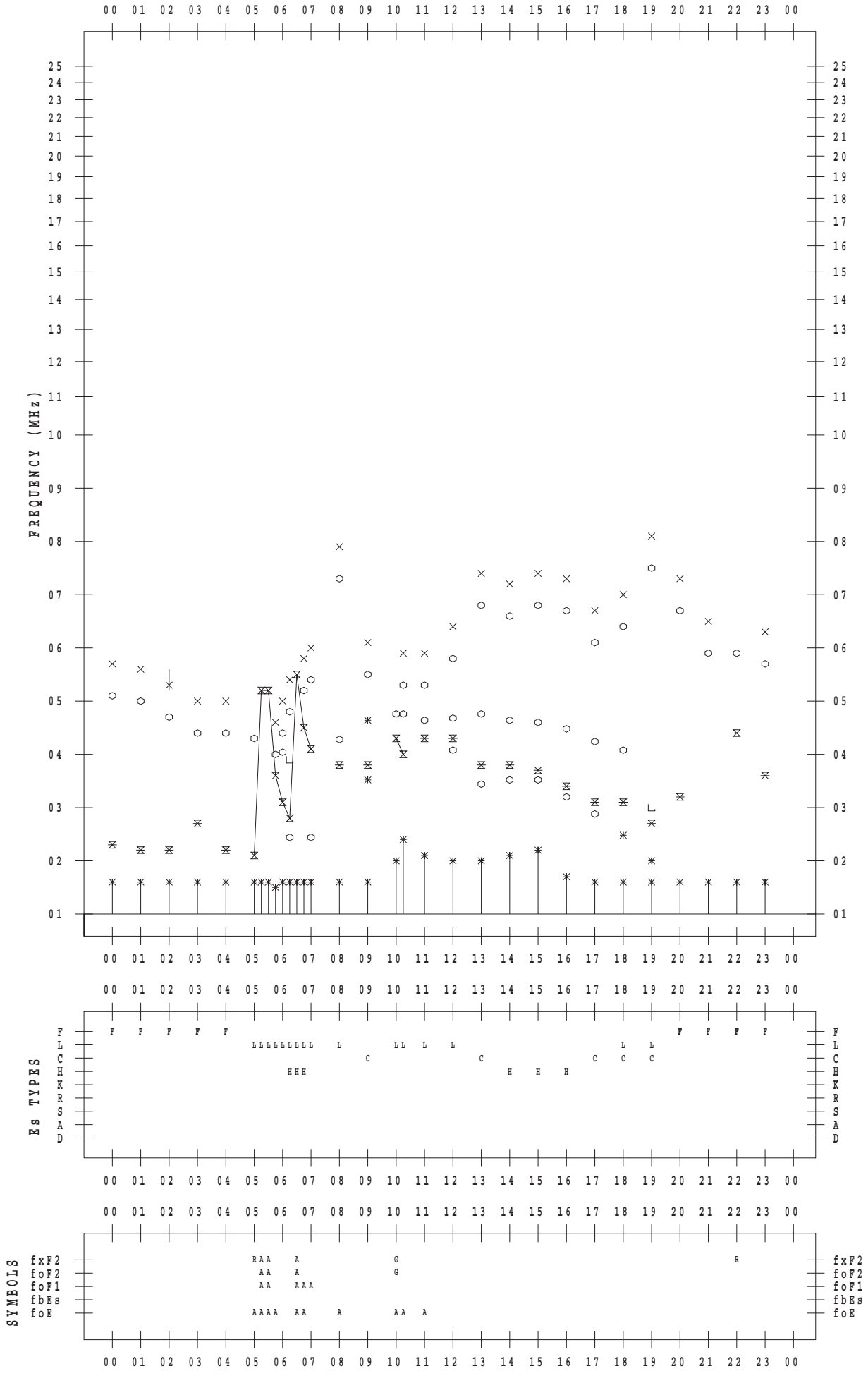
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/14

135 °E MEAN TIME



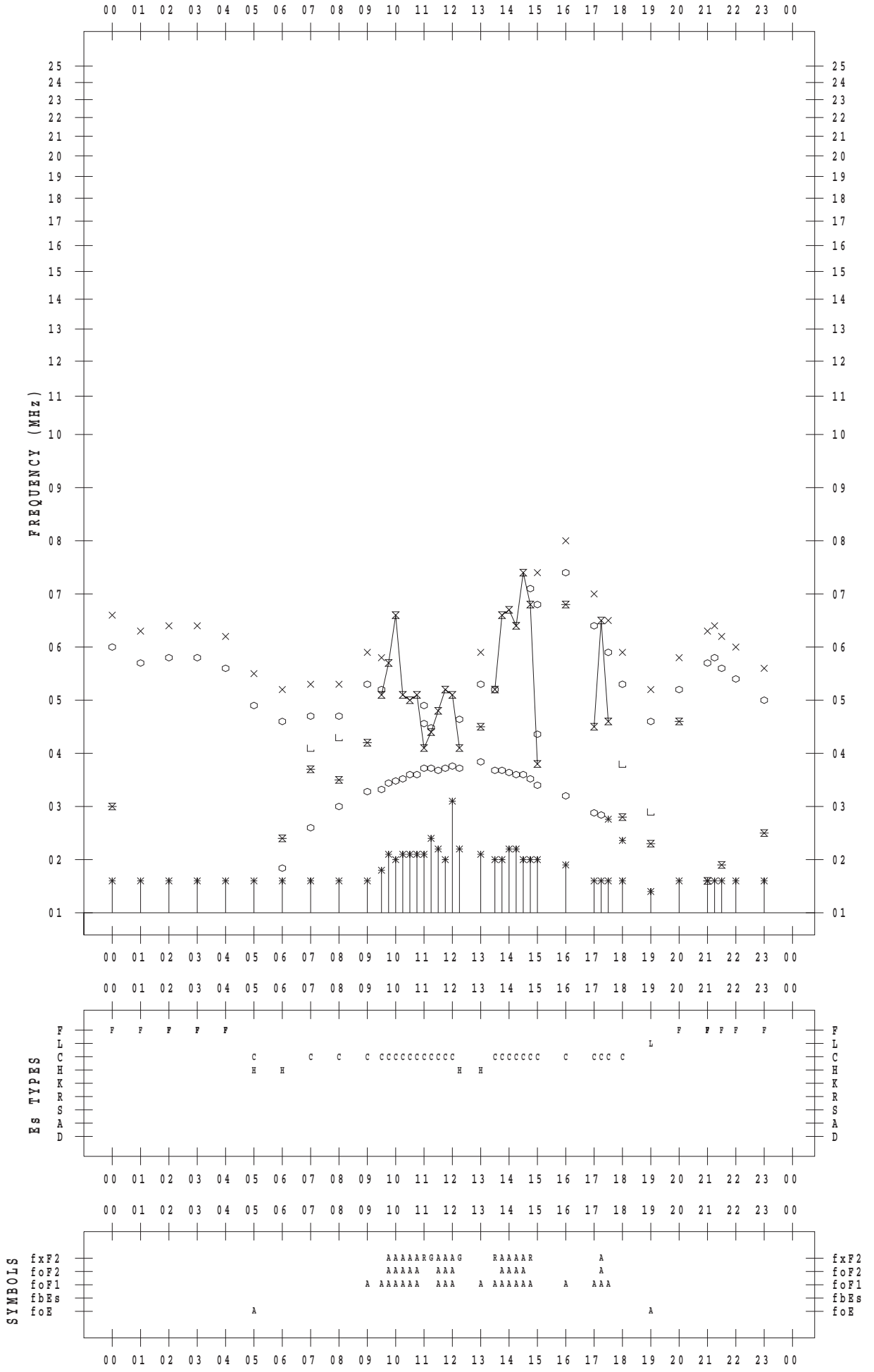
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/15

135 °E MEAN TIME



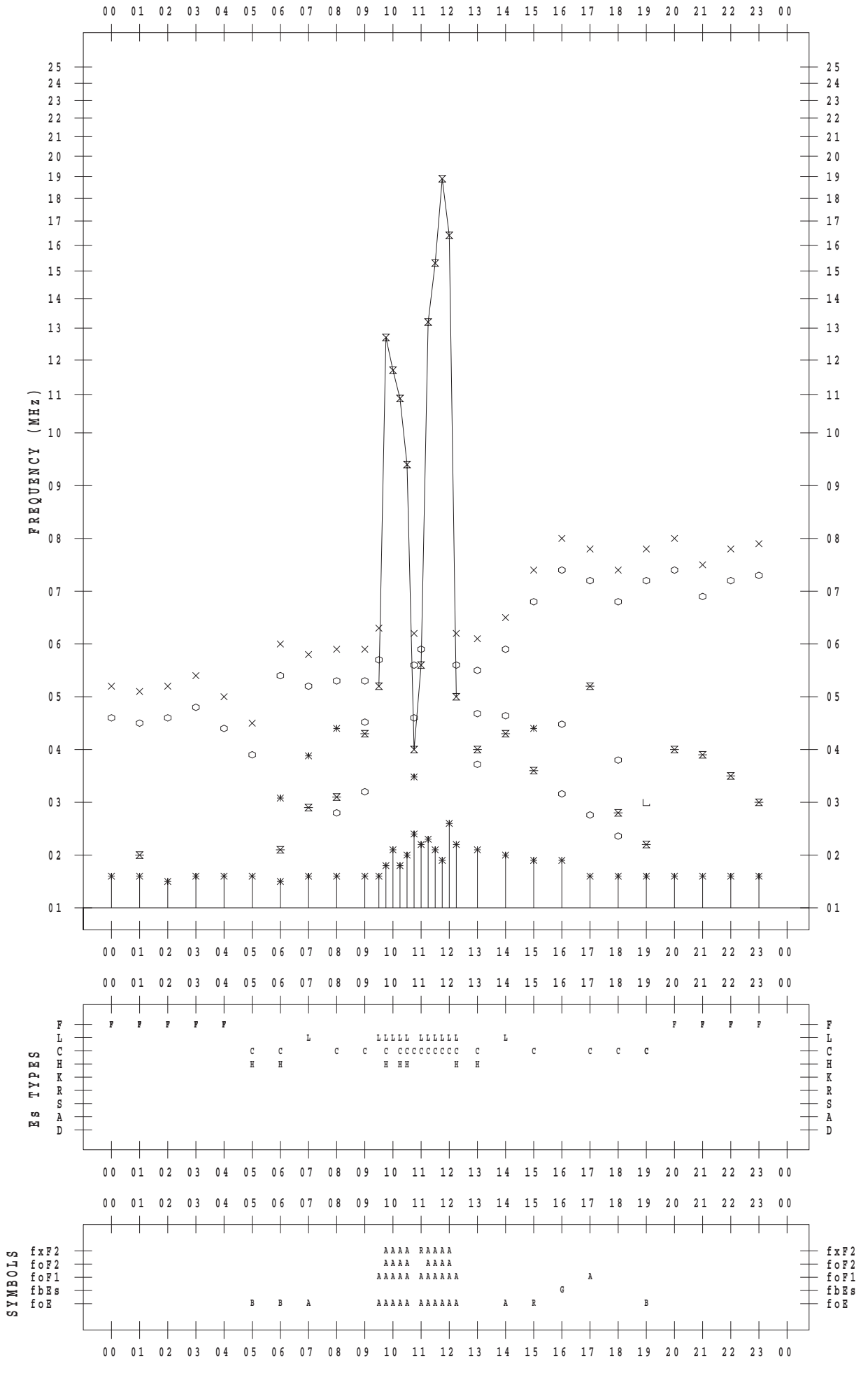
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/16

135 °E MEAN TIME



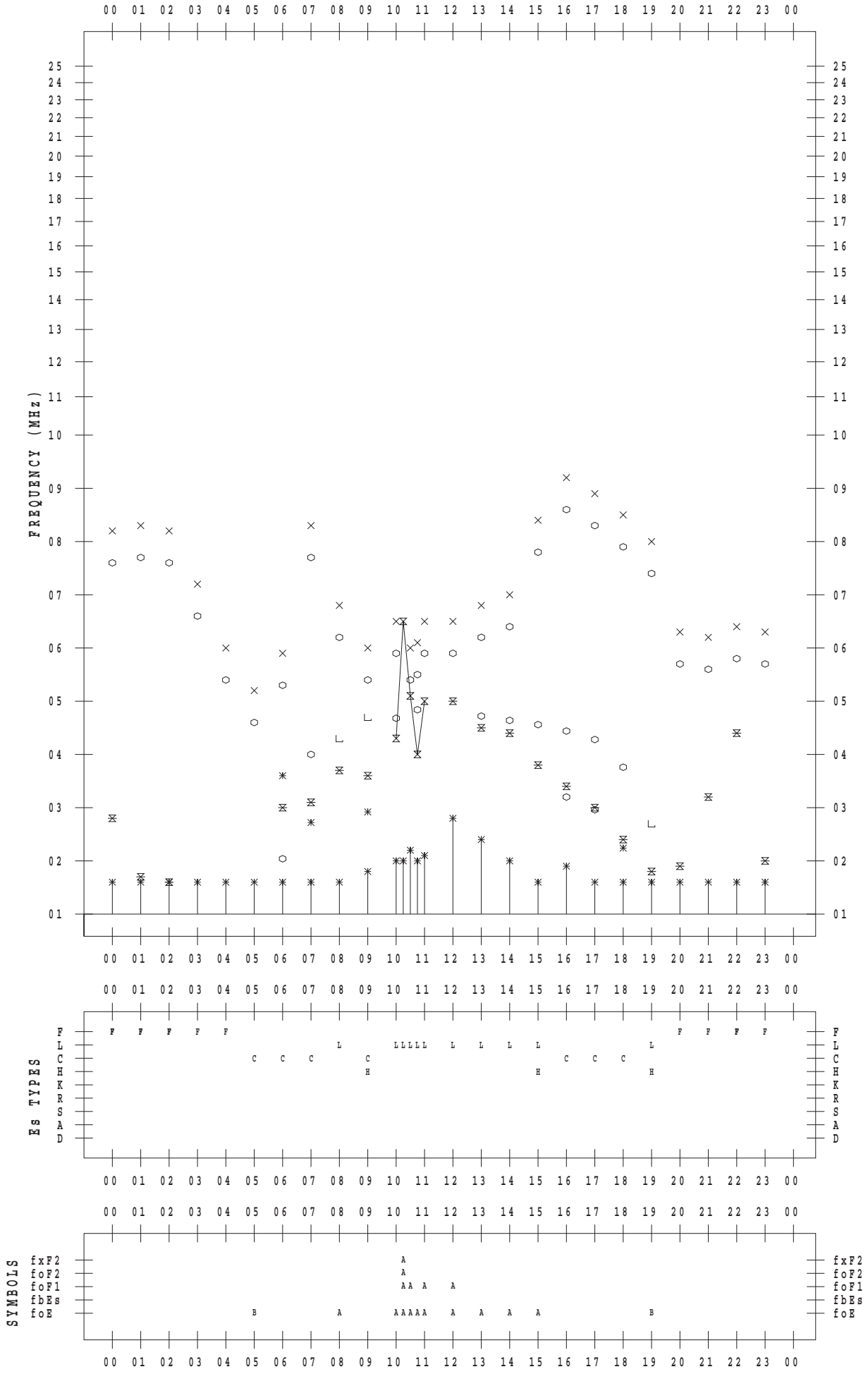
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/17

135 °E MEAN TIME



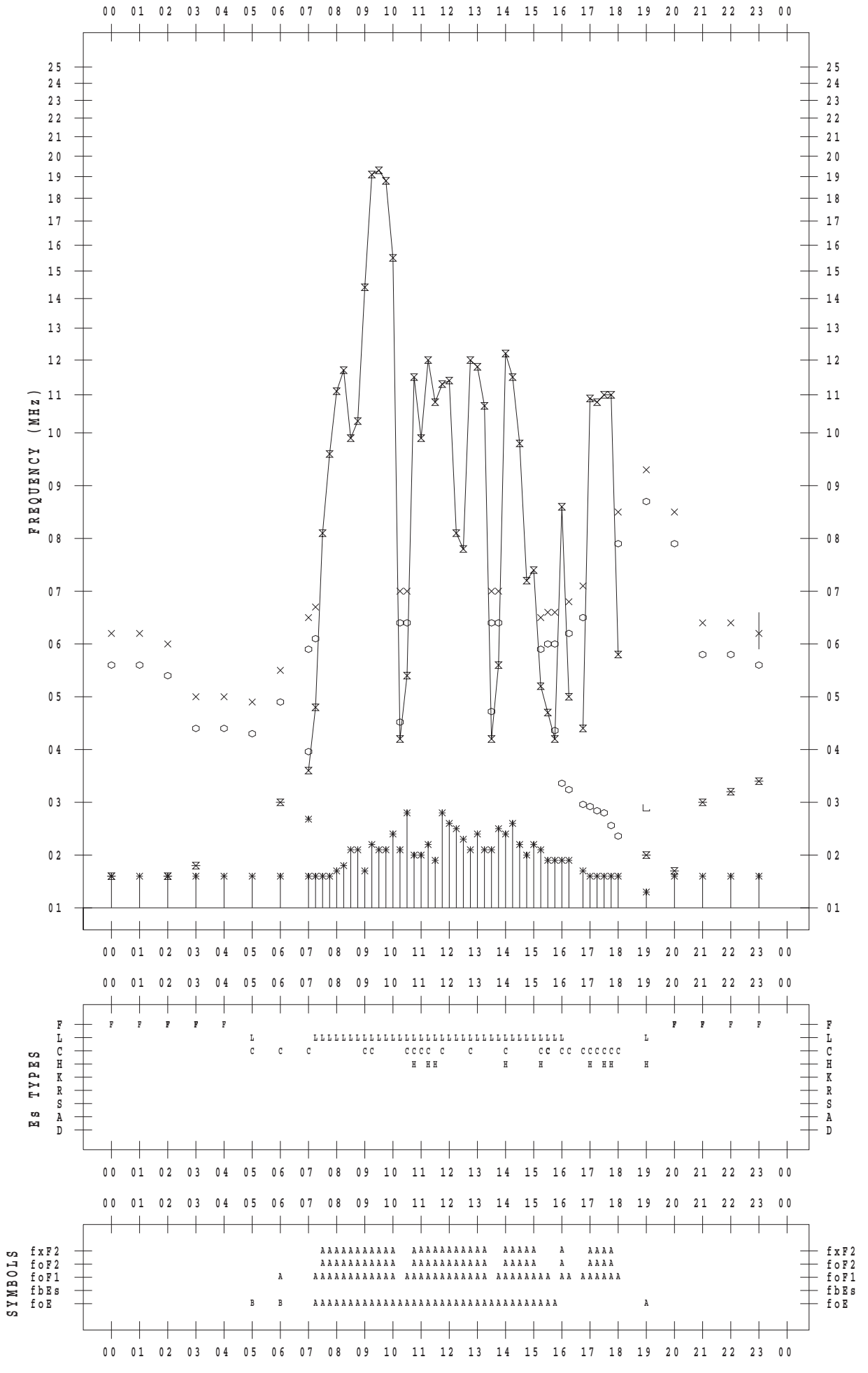
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/18

135 °E MEAN TIME



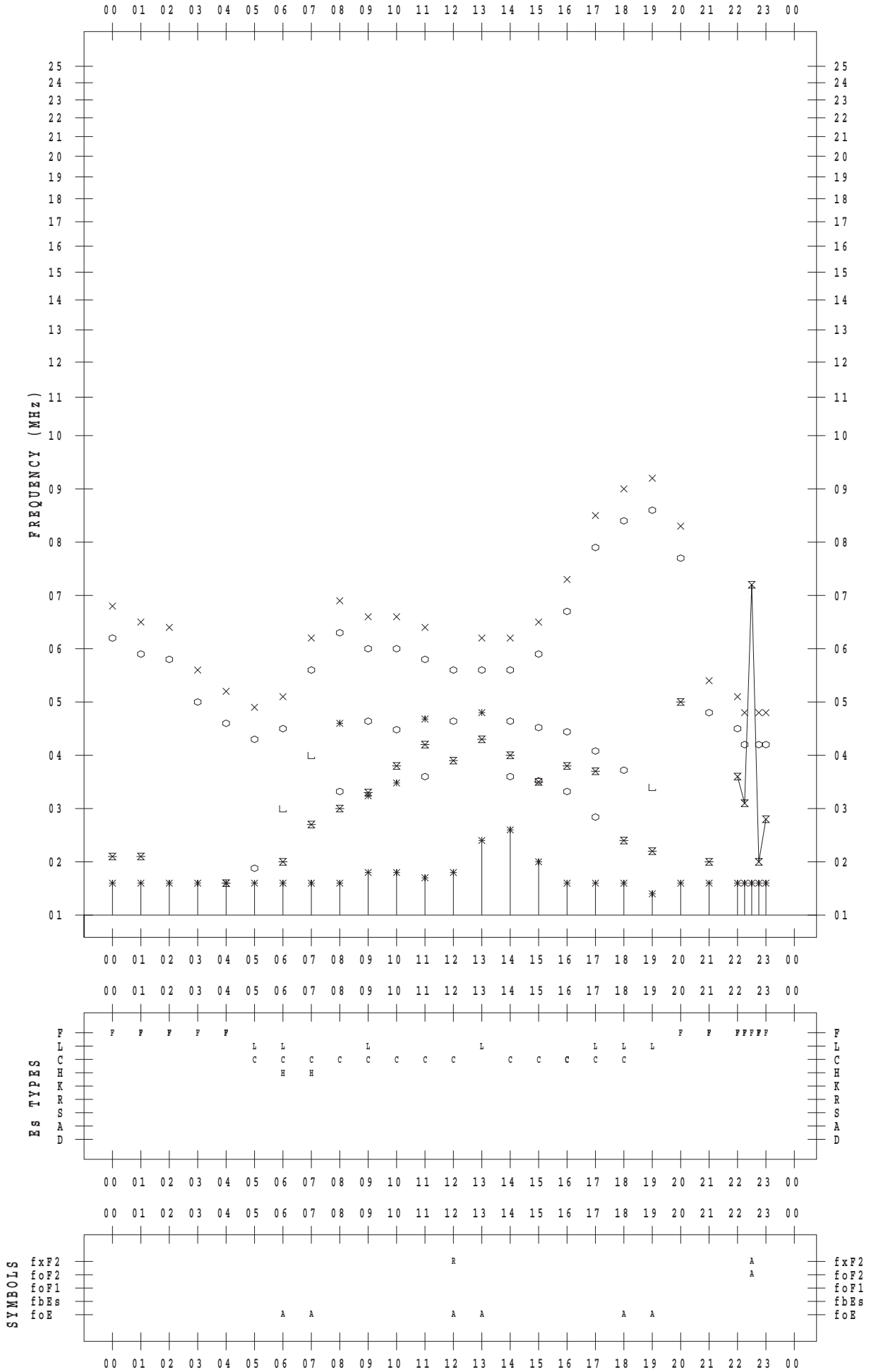
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/19

135 °E MEAN TIME



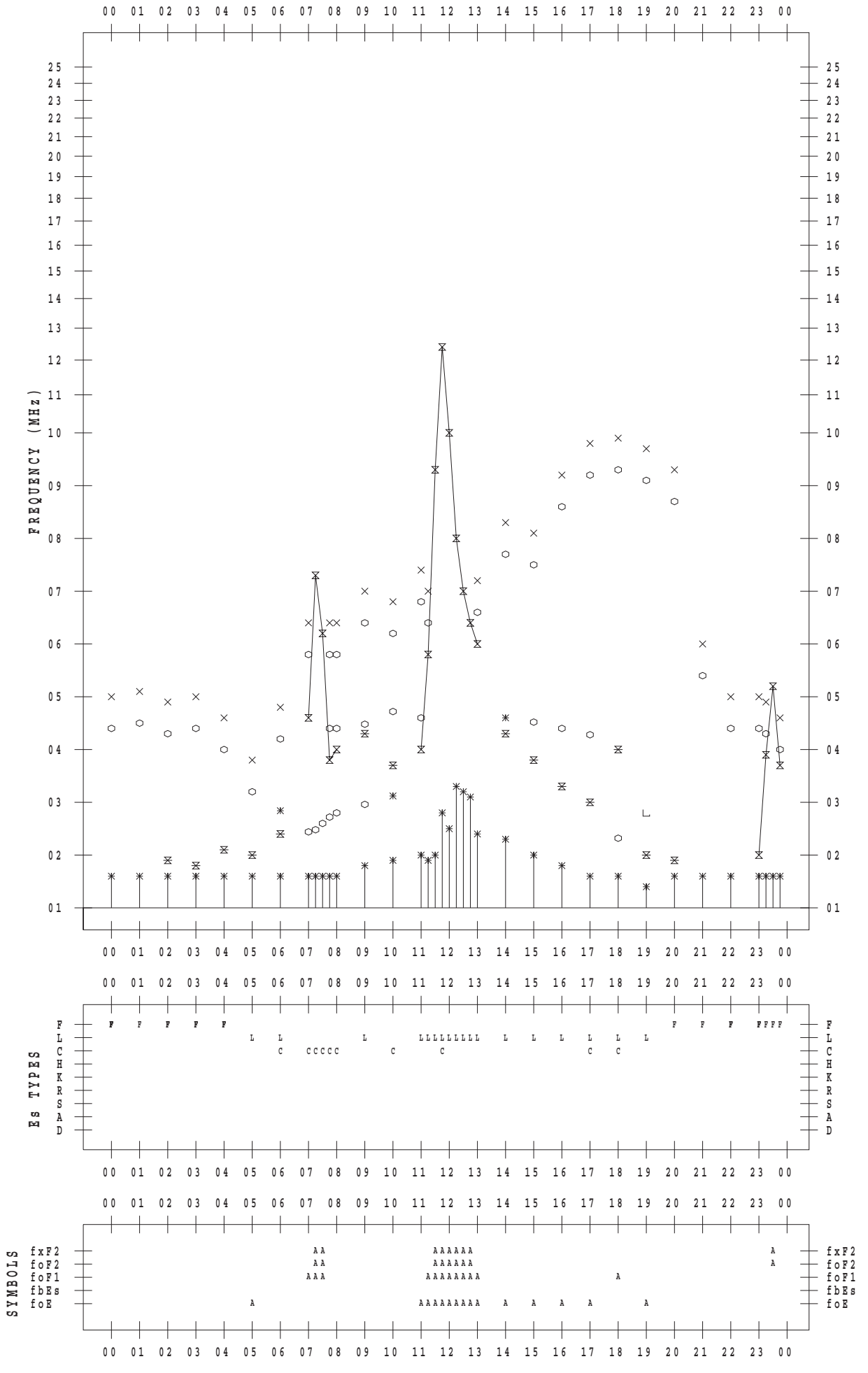
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/20

135 °E MEAN TIME



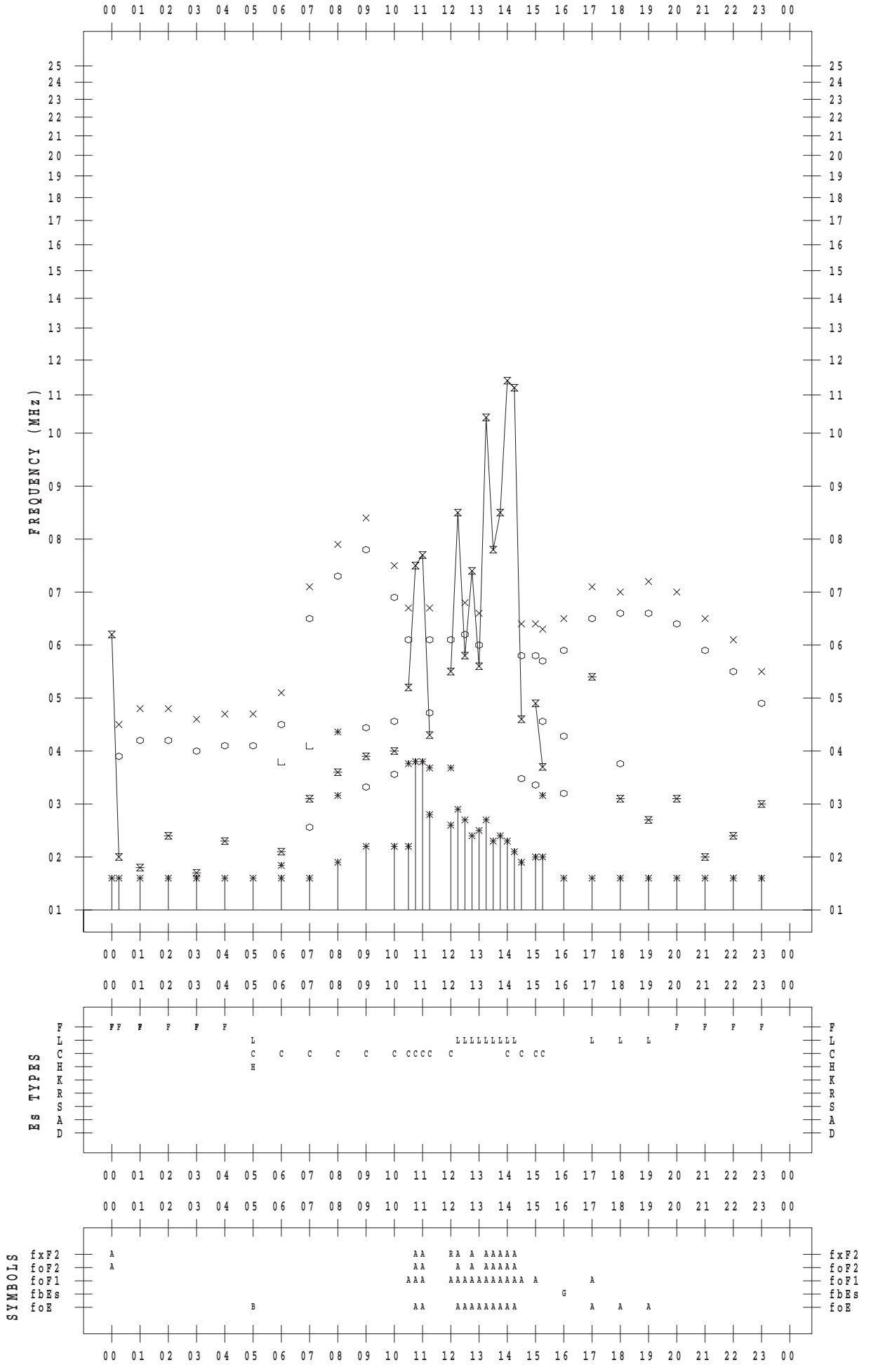
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/21

135 °E MEAN TIME



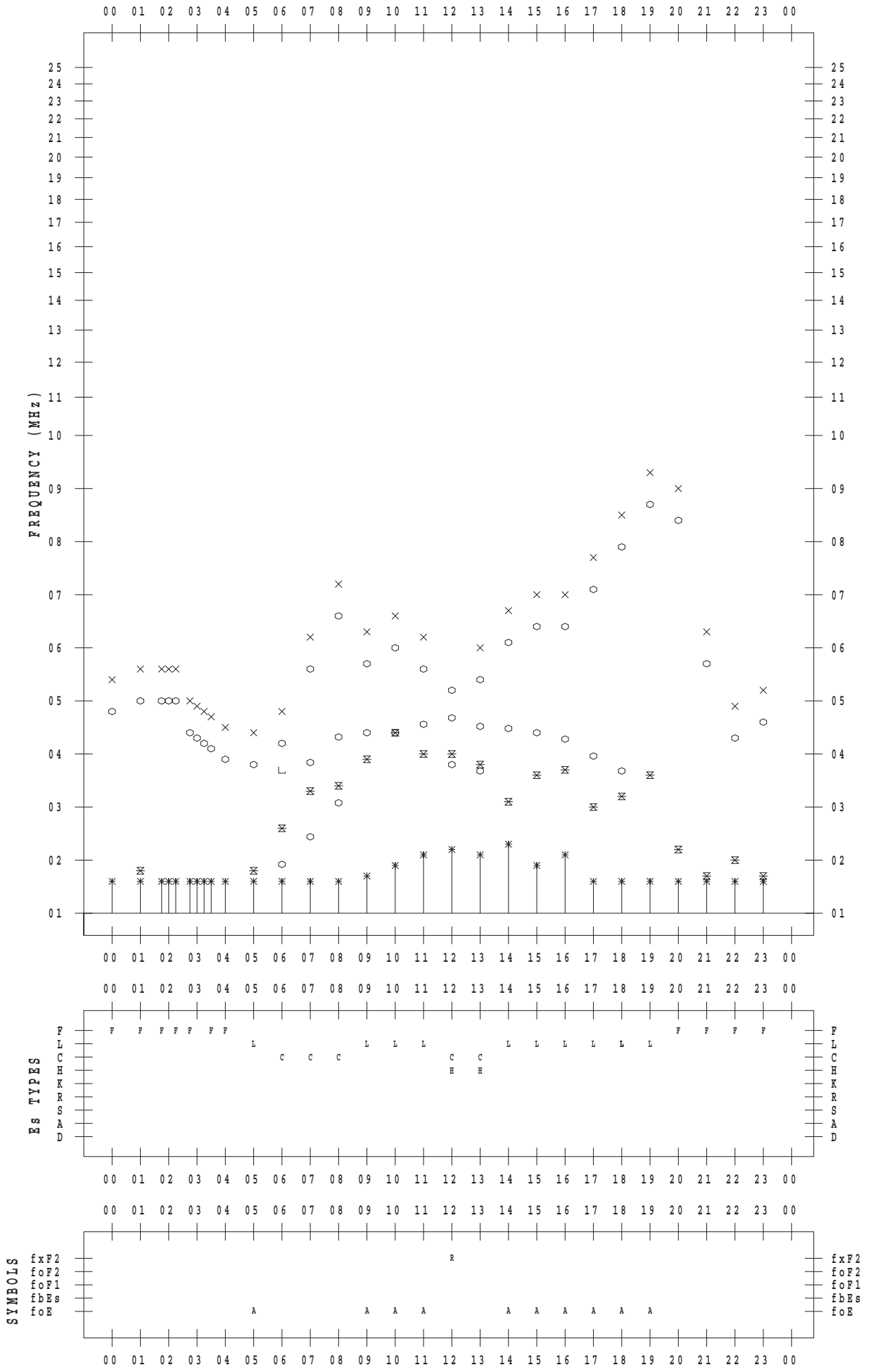
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/22

135 °E MEAN TIME



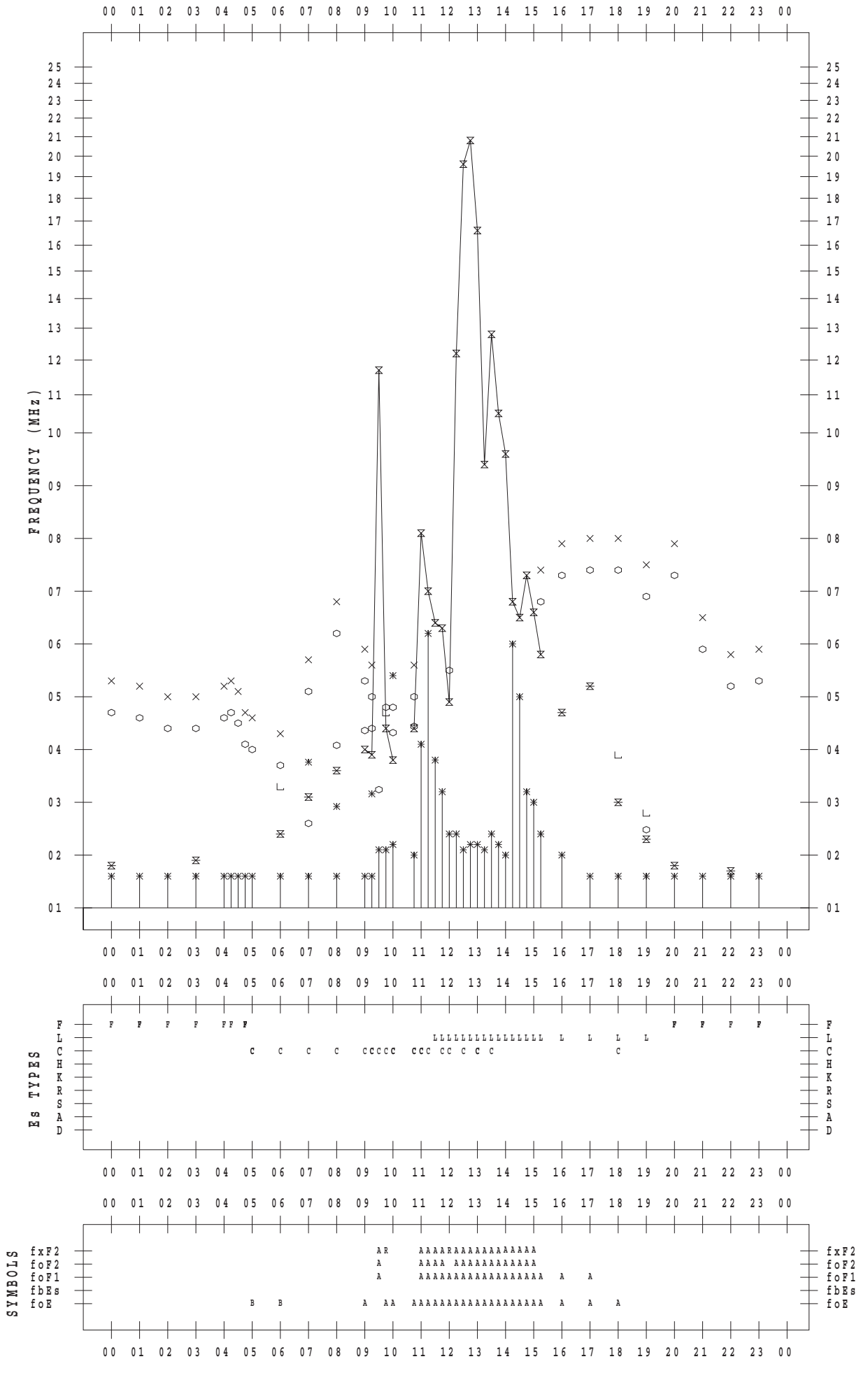
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/23

135 °E MEAN TIME



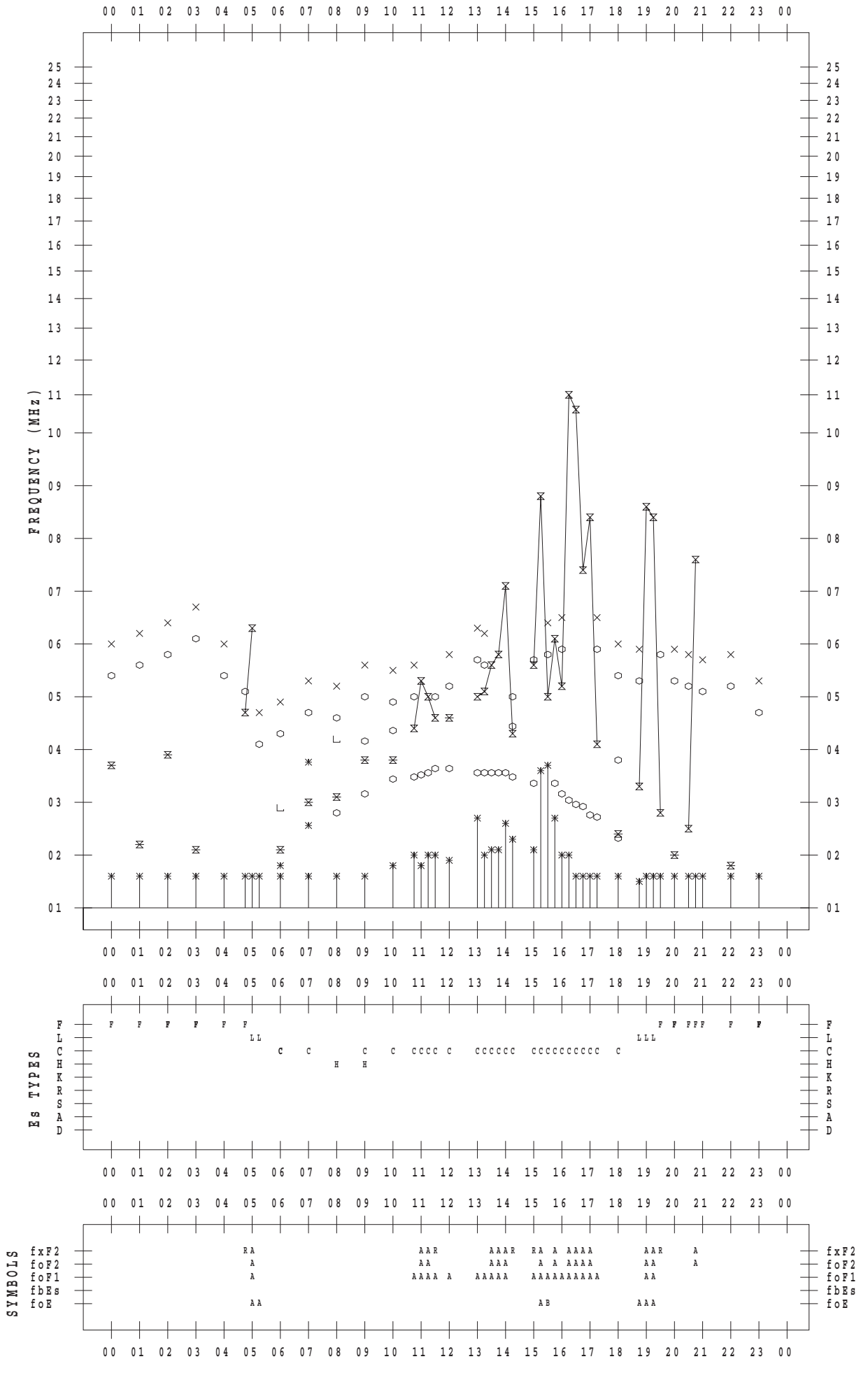
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/24

135 °E MEAN TIME



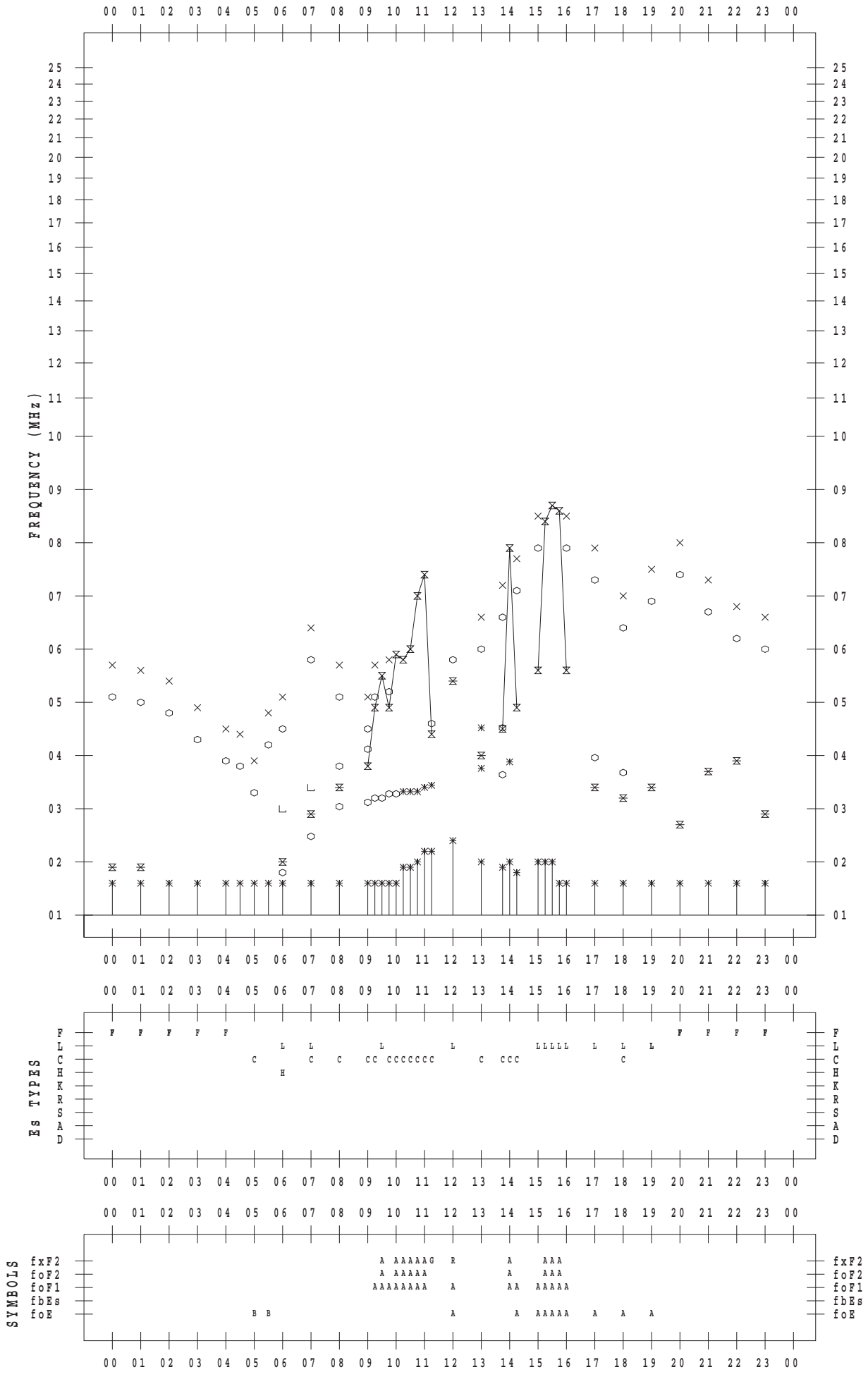
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/25

135 °E MEAN TIME



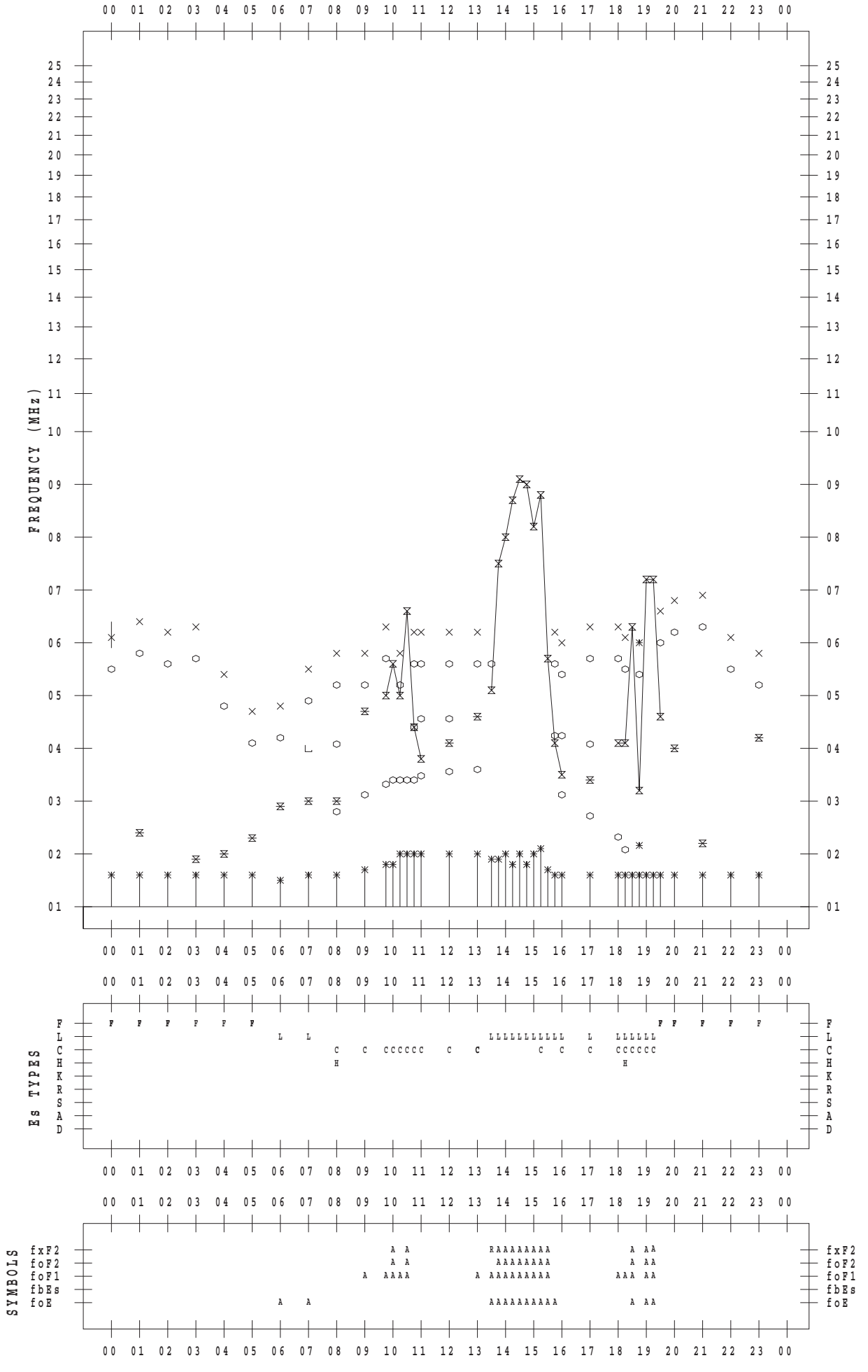
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/26

135 °E MEAN TIME



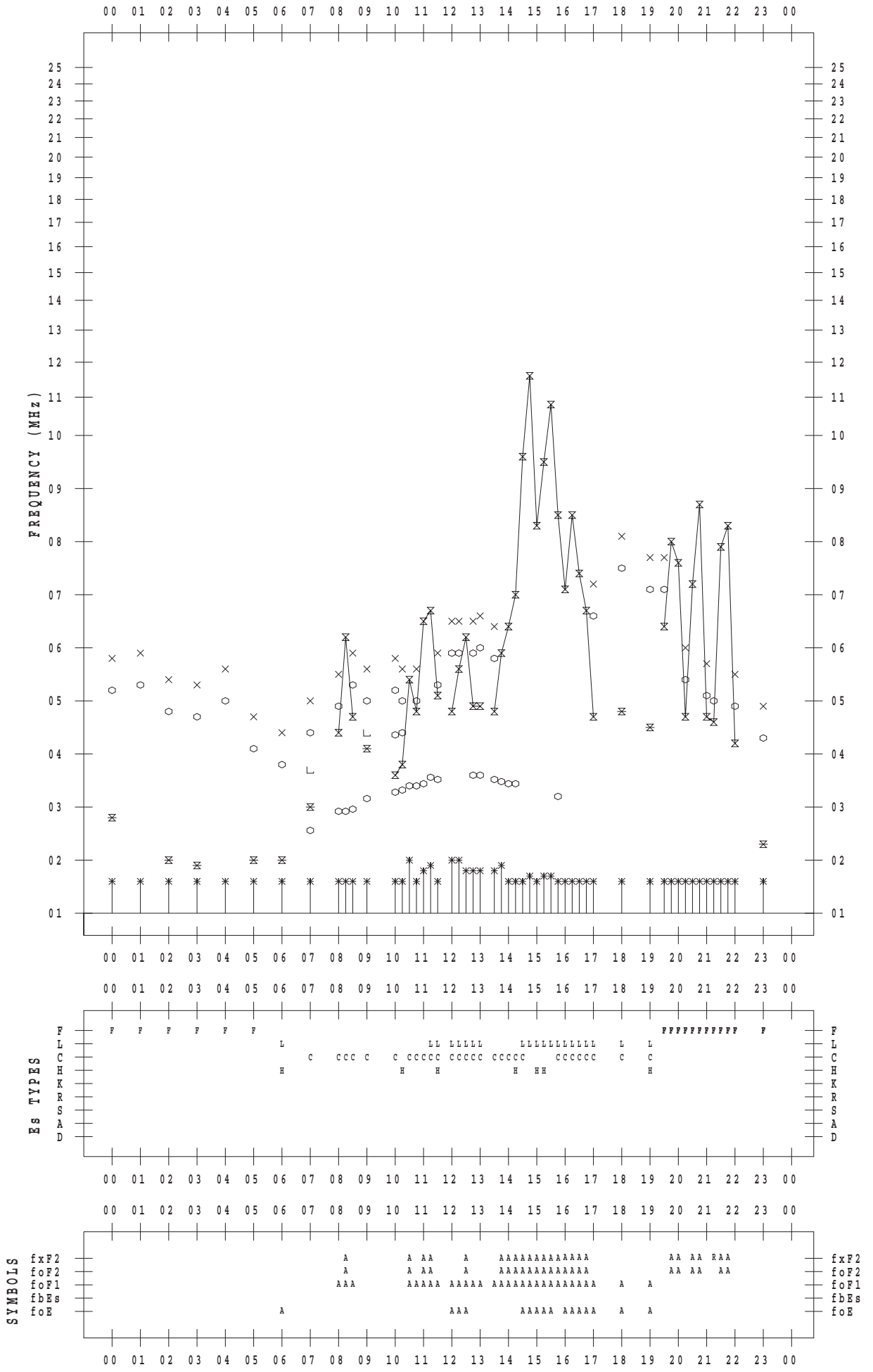
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/27

135 °E MEAN TIME



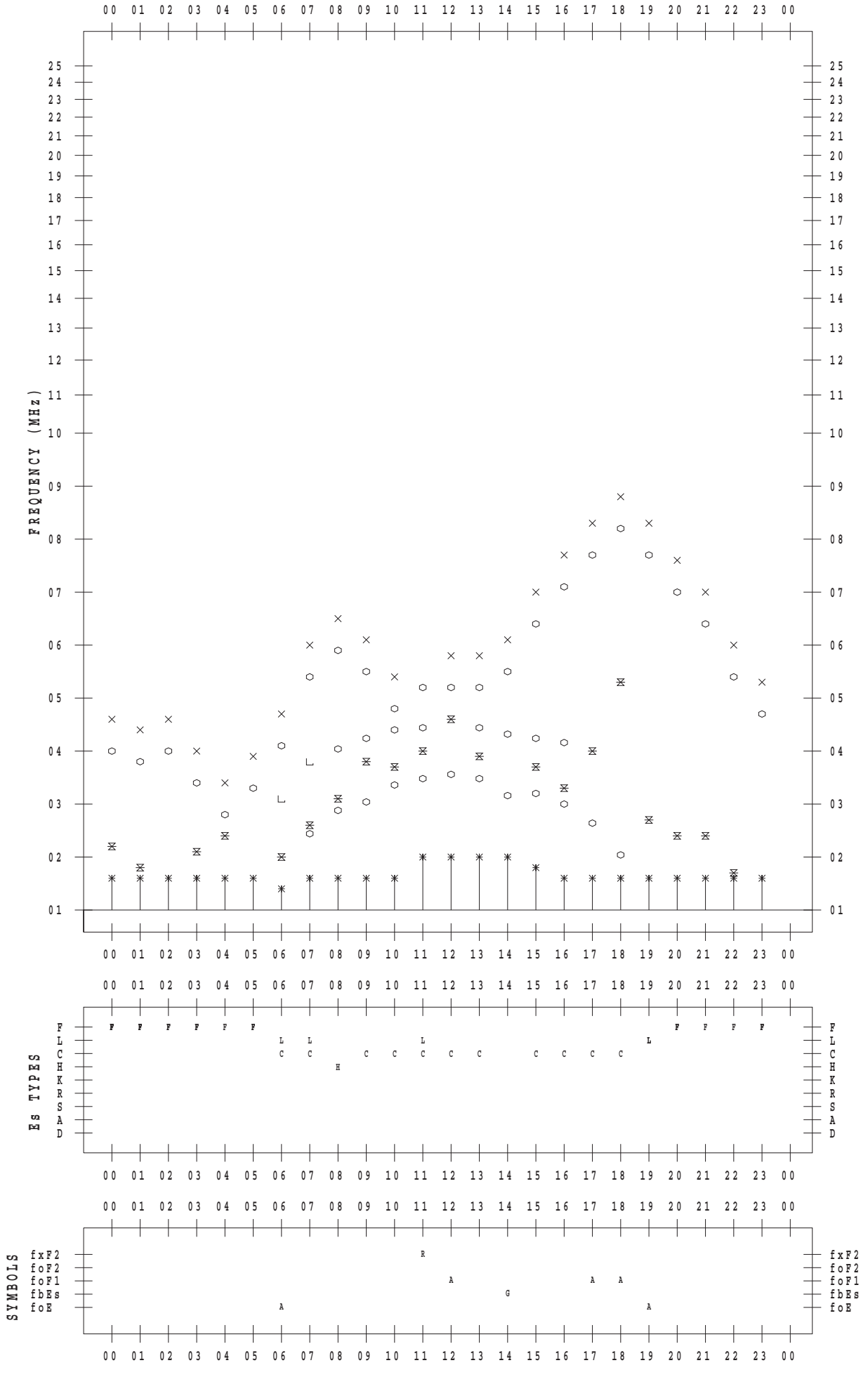
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/28

135 °E MEAN TIME



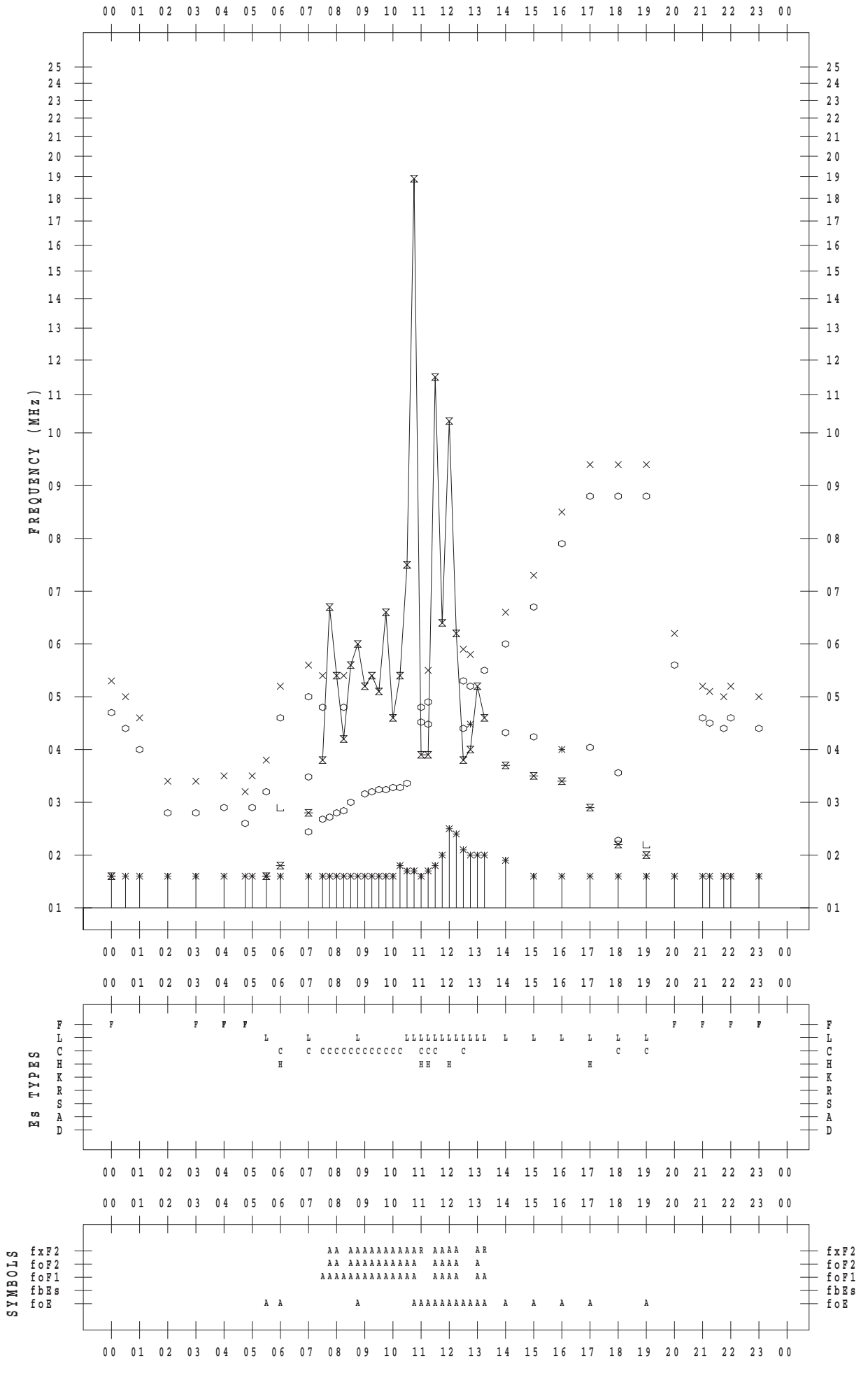
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/29

135 °E MEAN TIME



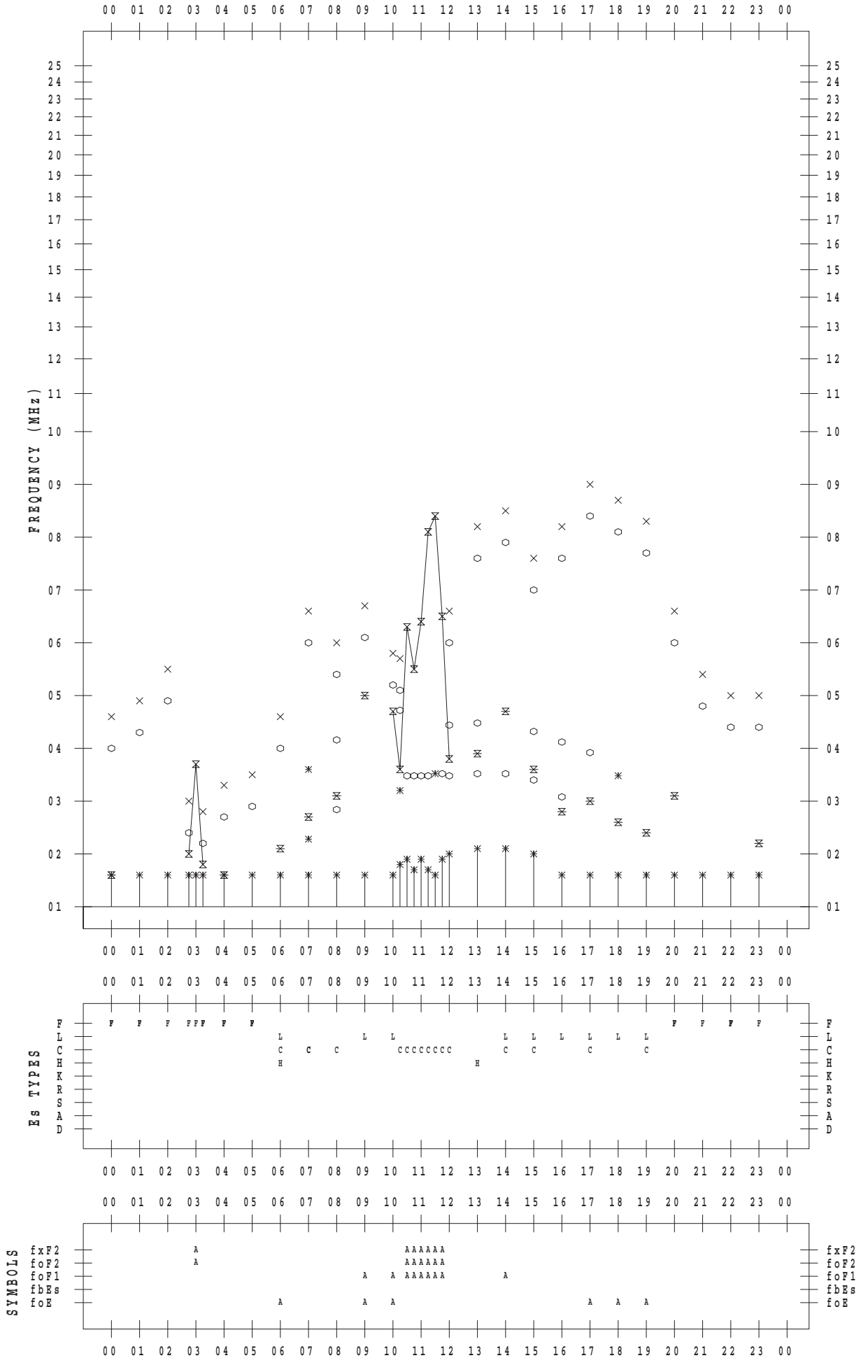
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/30

135 °E MEAN TIME



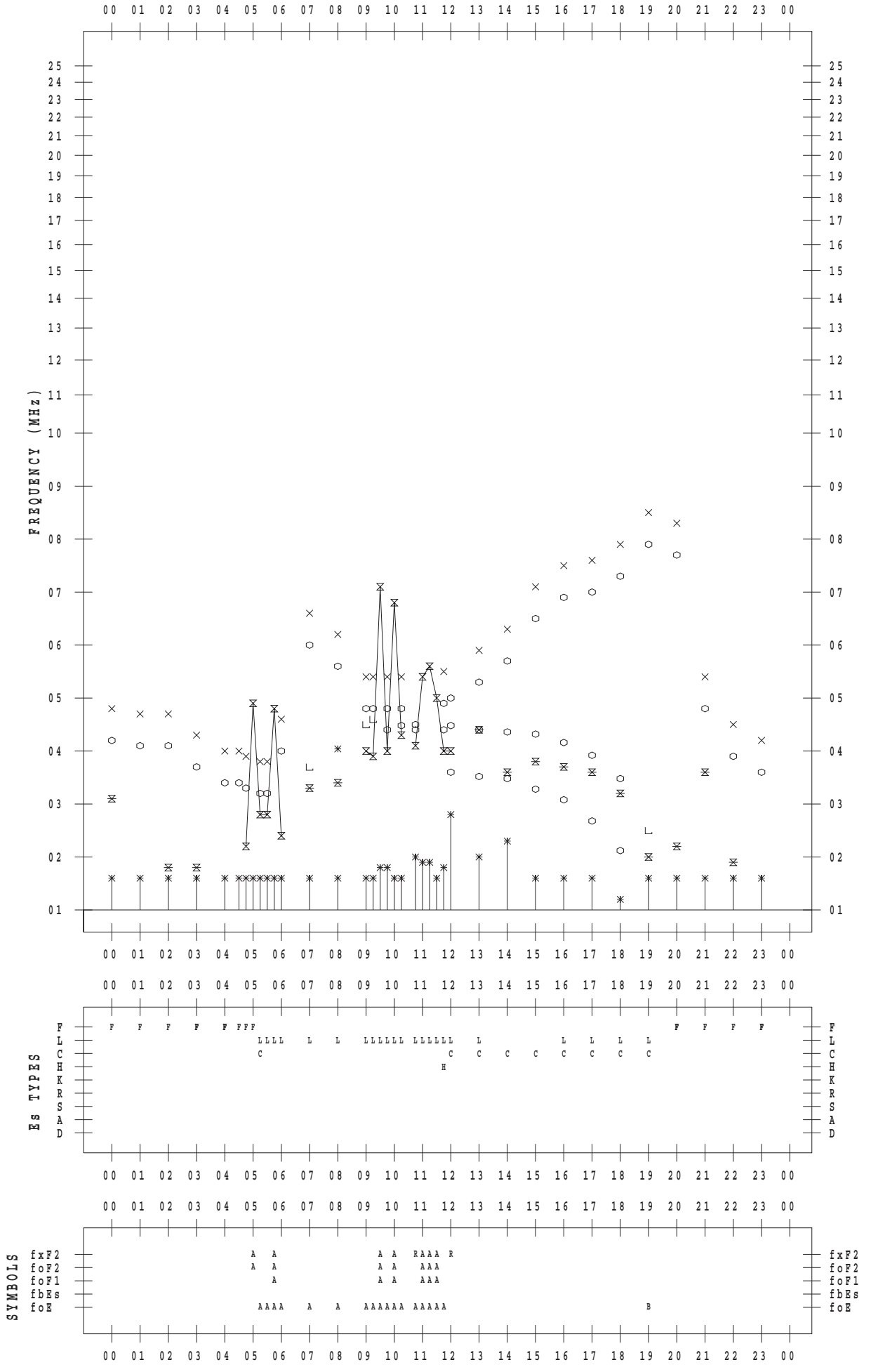
f-PLOT DATA

SCALER : M.NISHIDA

STATION : Yamagawa

DATE : 2016/ 7/31

135 °E MEAN TIME



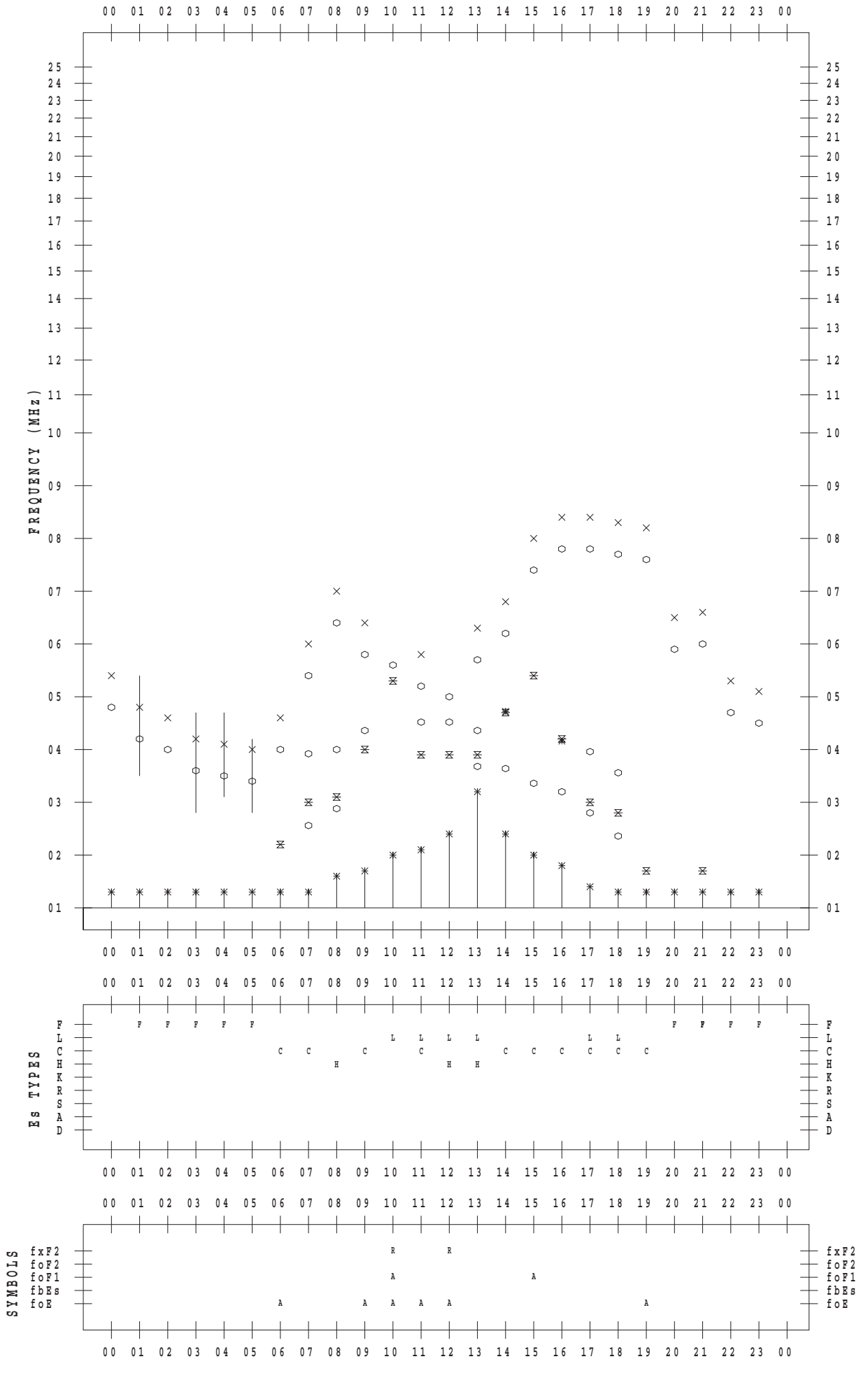
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 1

135 °E MEAN TIME



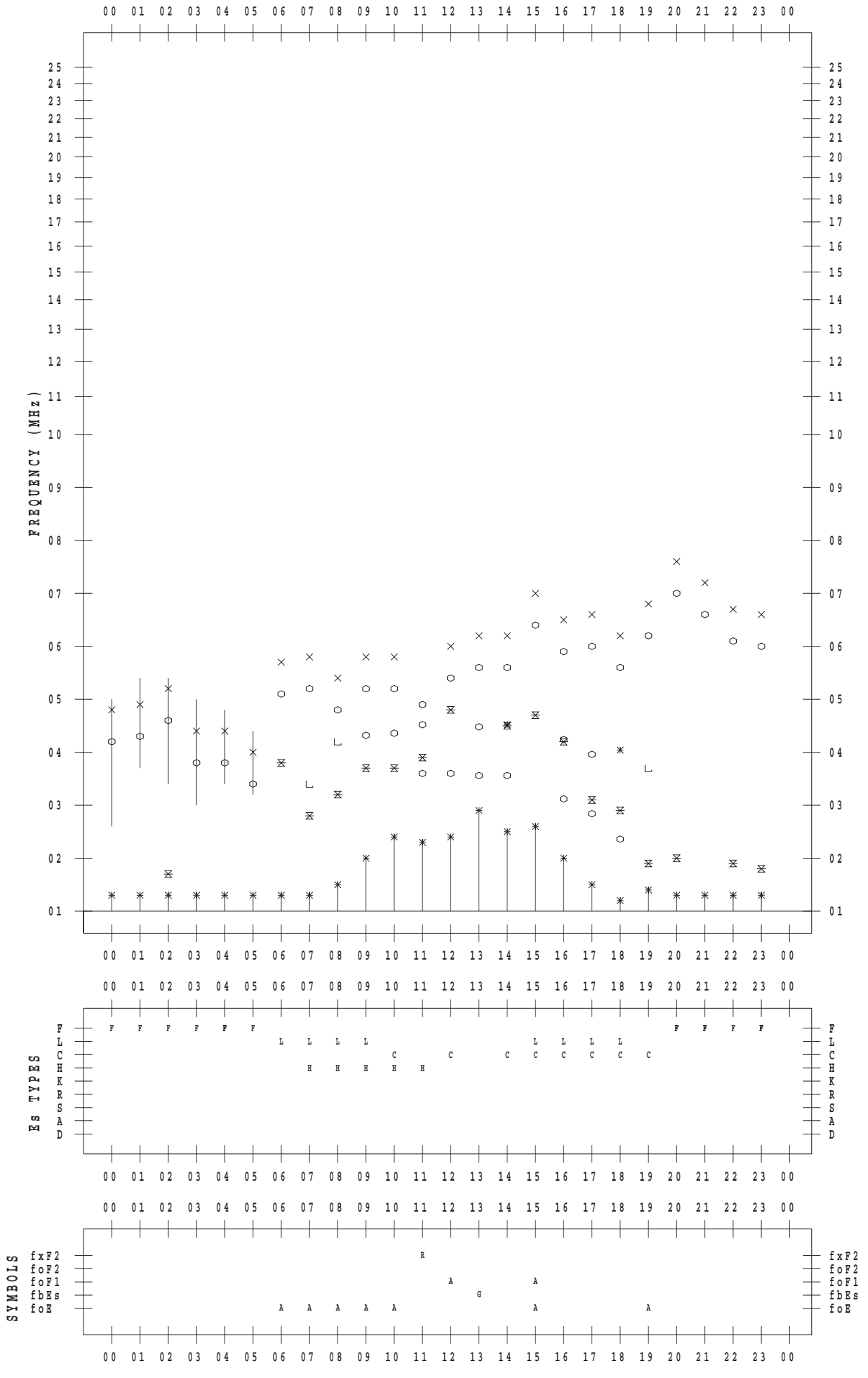
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 2

135 °E MEAN TIME



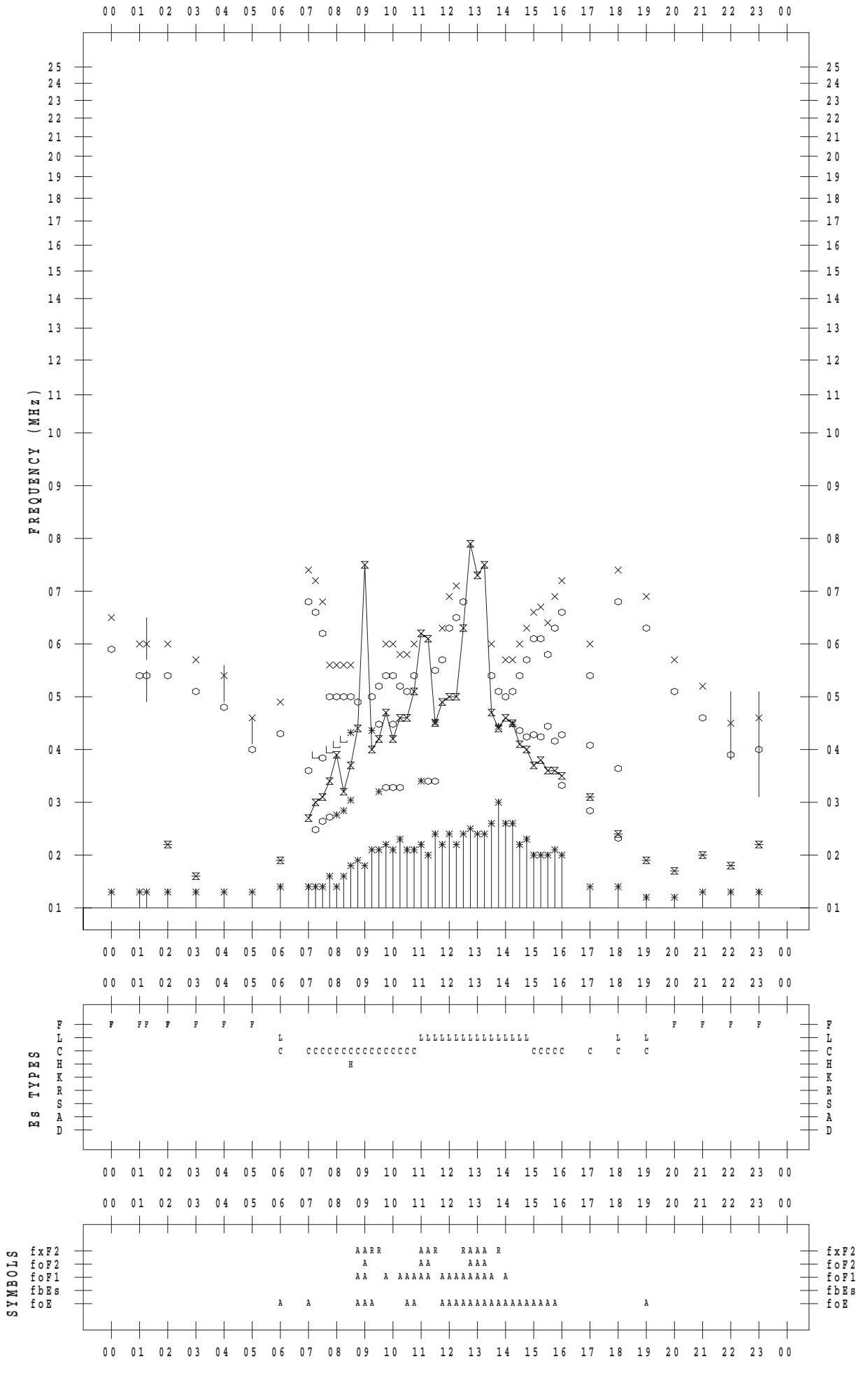
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 3

135 °E MEAN TIME



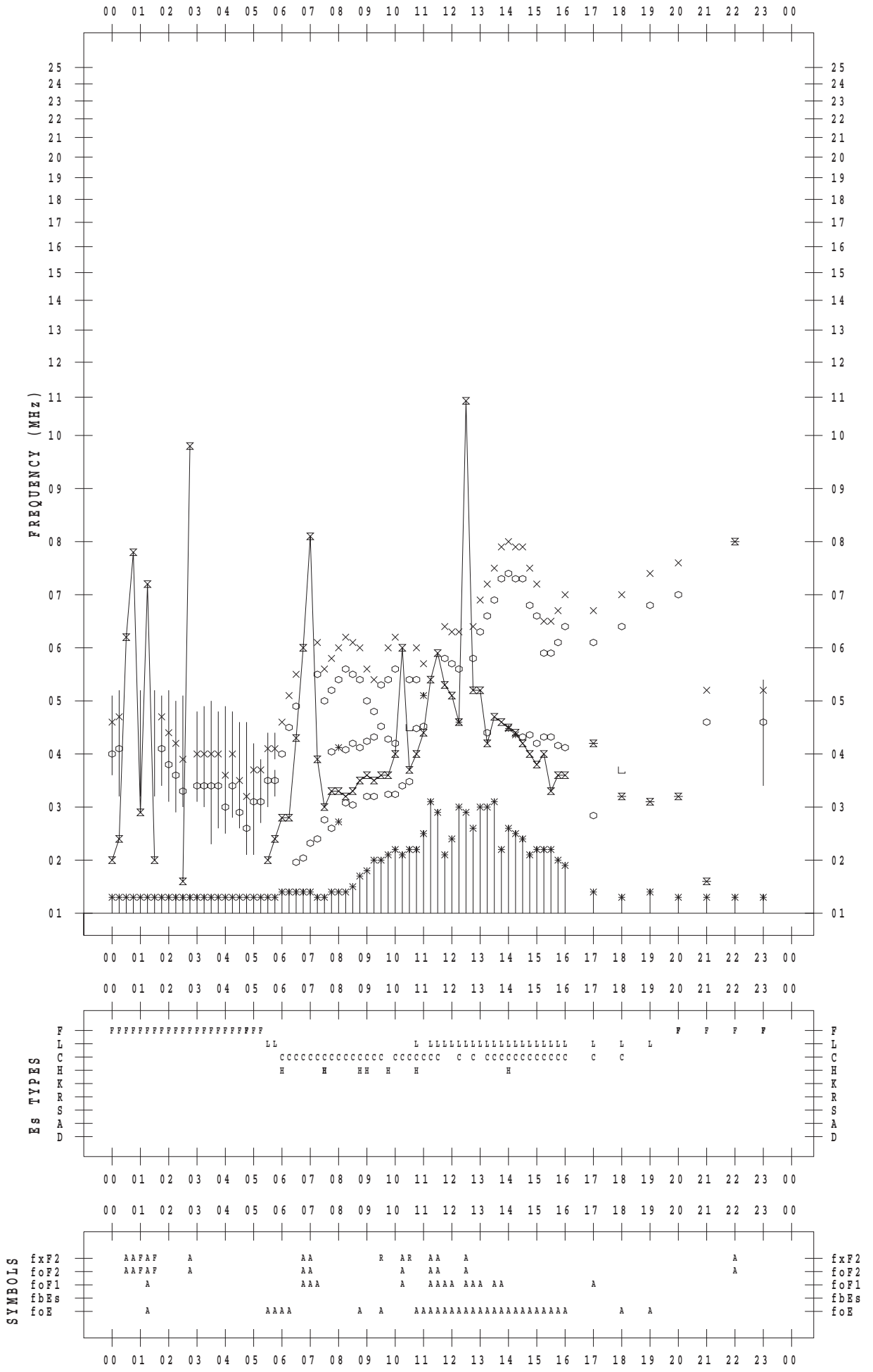
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 4

135 °E MEAN TIME



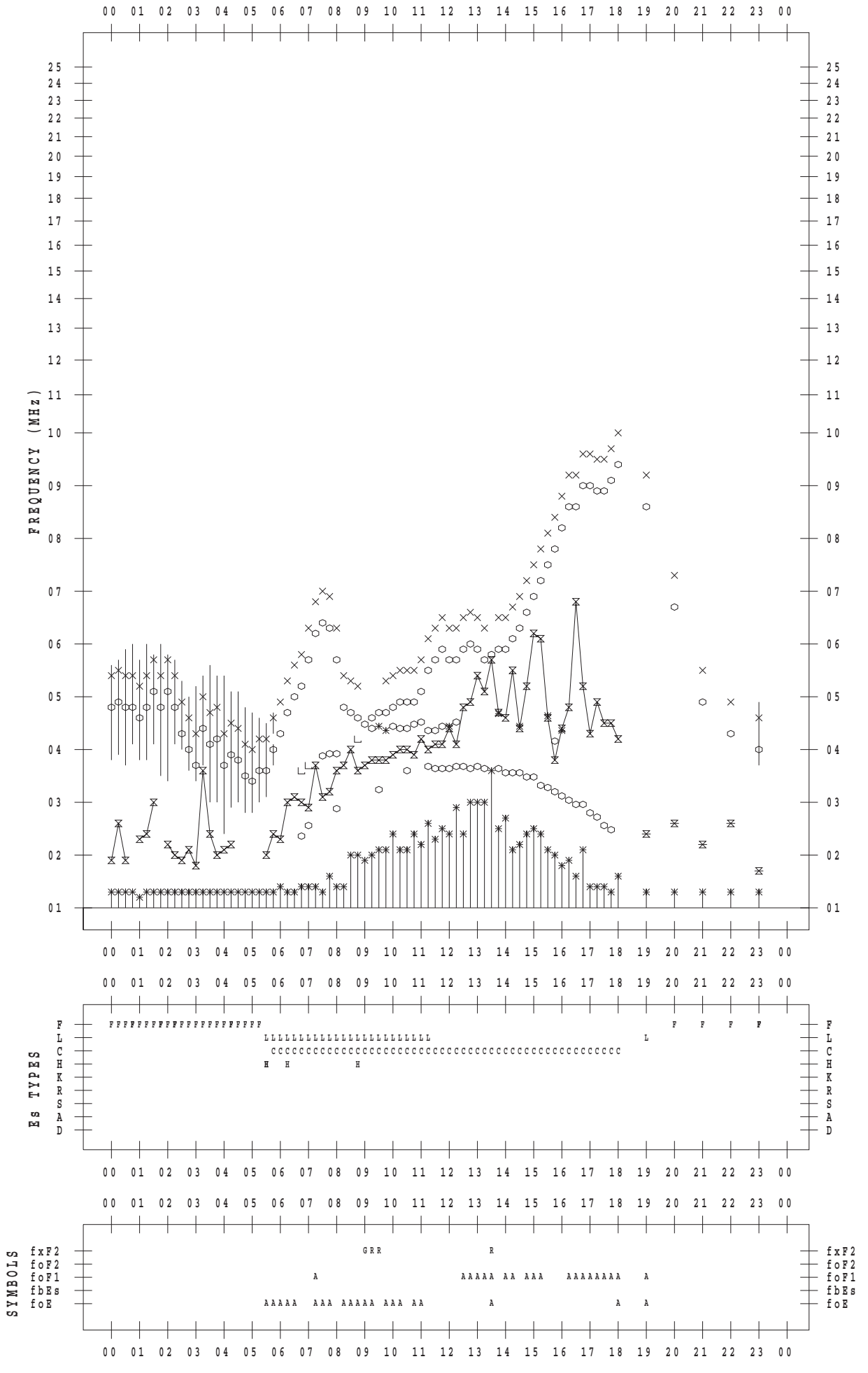
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 5

135 °E MEAN TIME



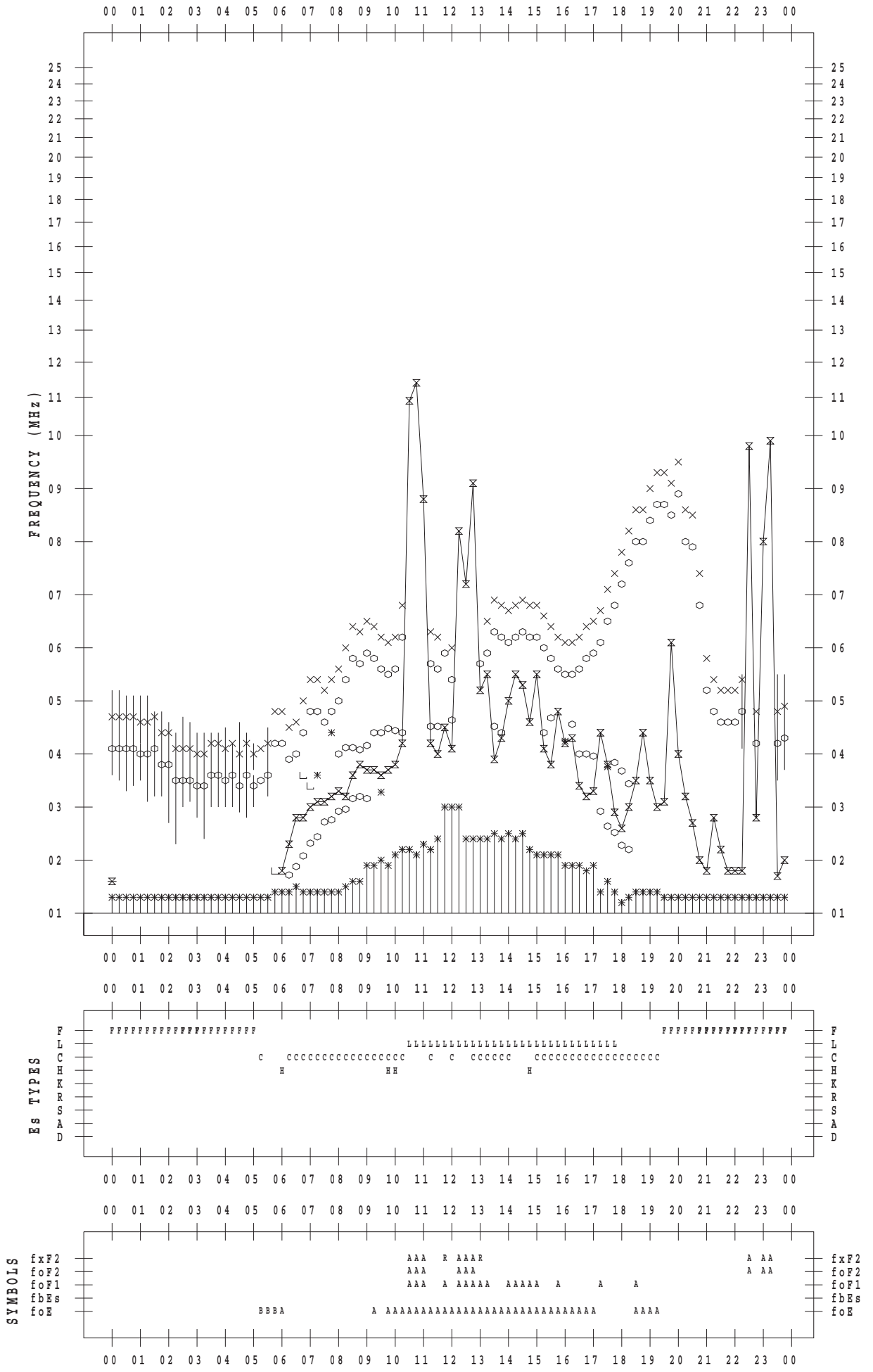
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 6

135 °E MEAN TIME



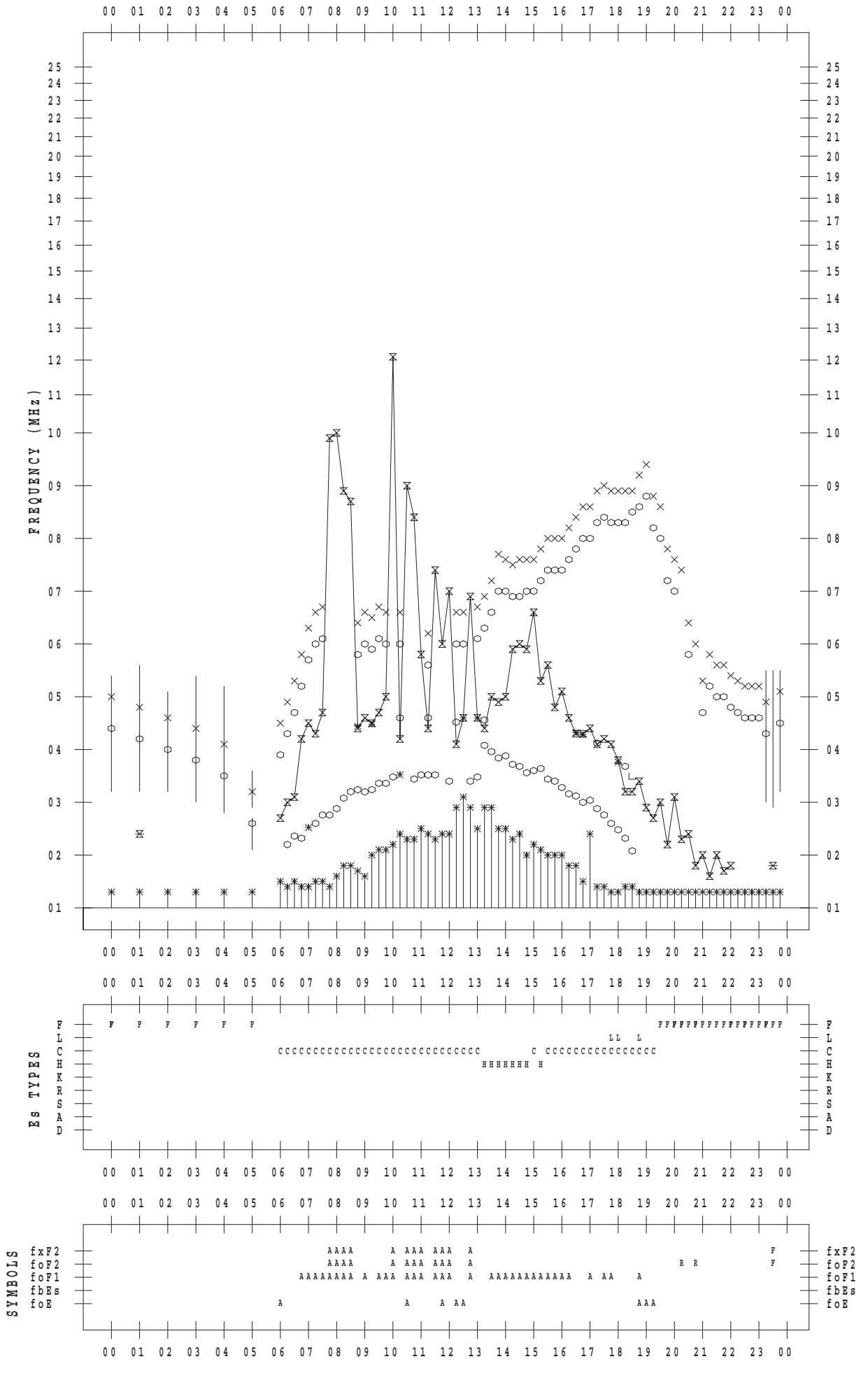
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 7

135 °E MEAN TIME



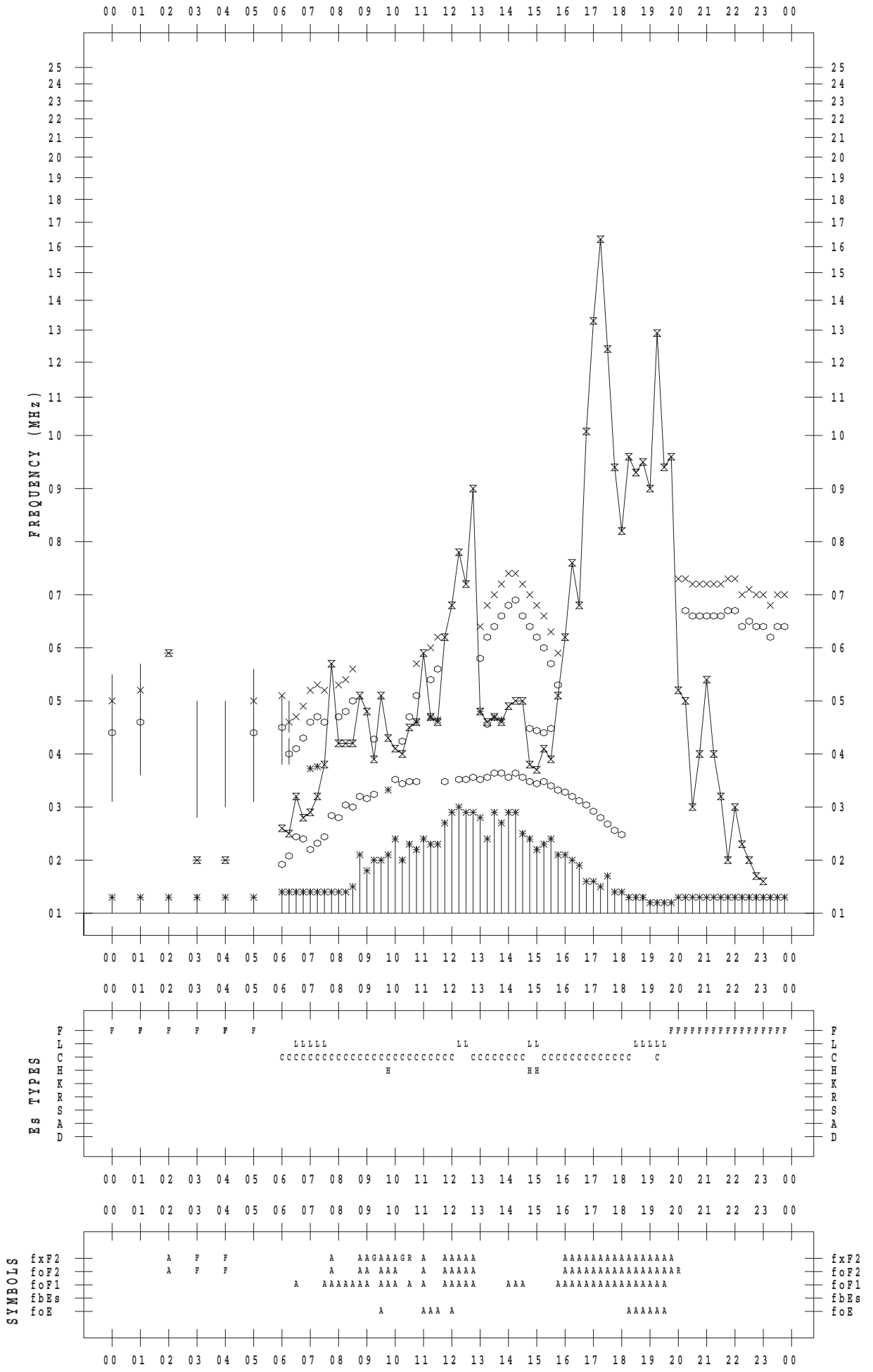
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 8

135 °E MEAN TIME



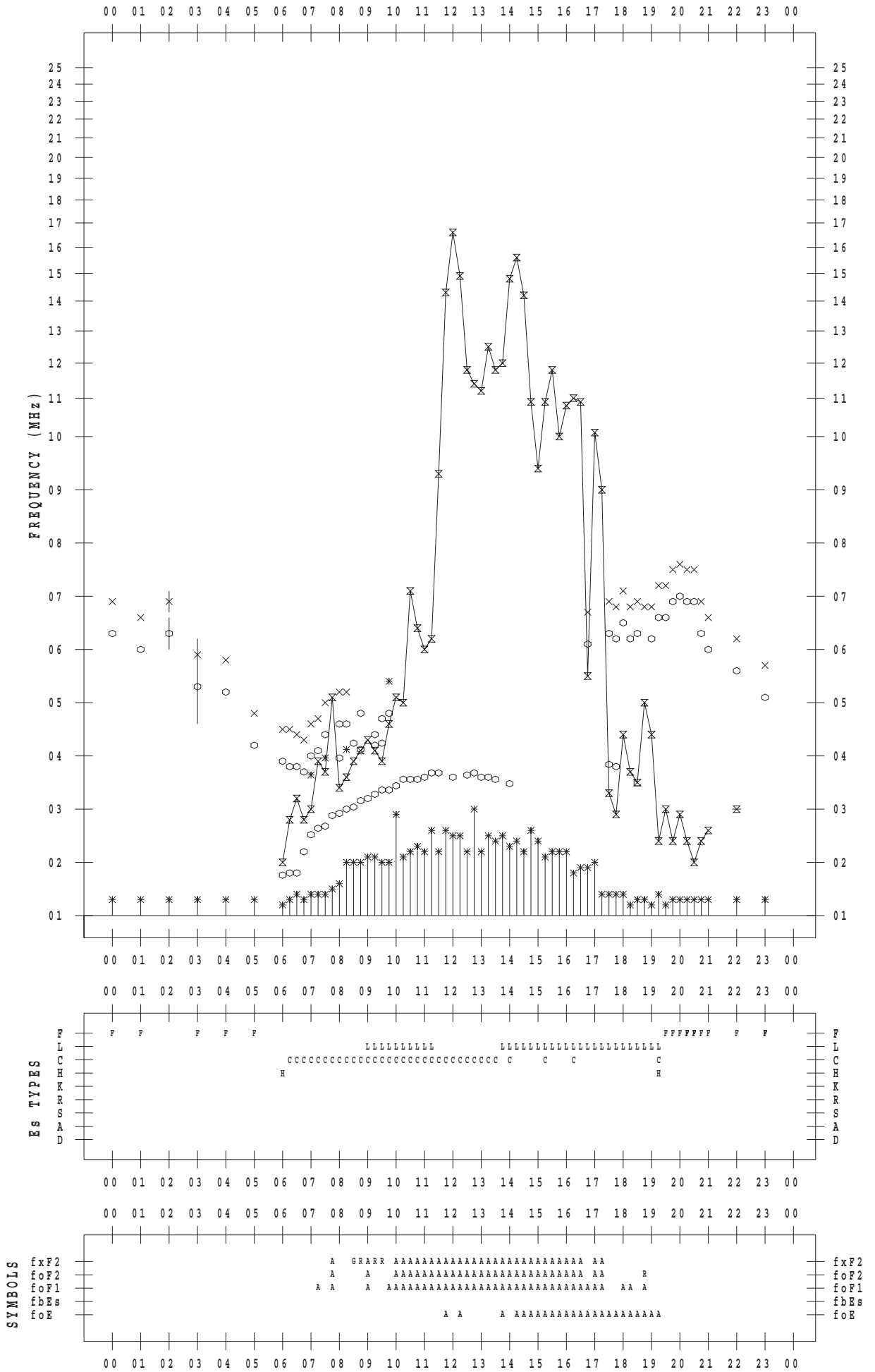
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/ 9

135 °E MEAN TIME



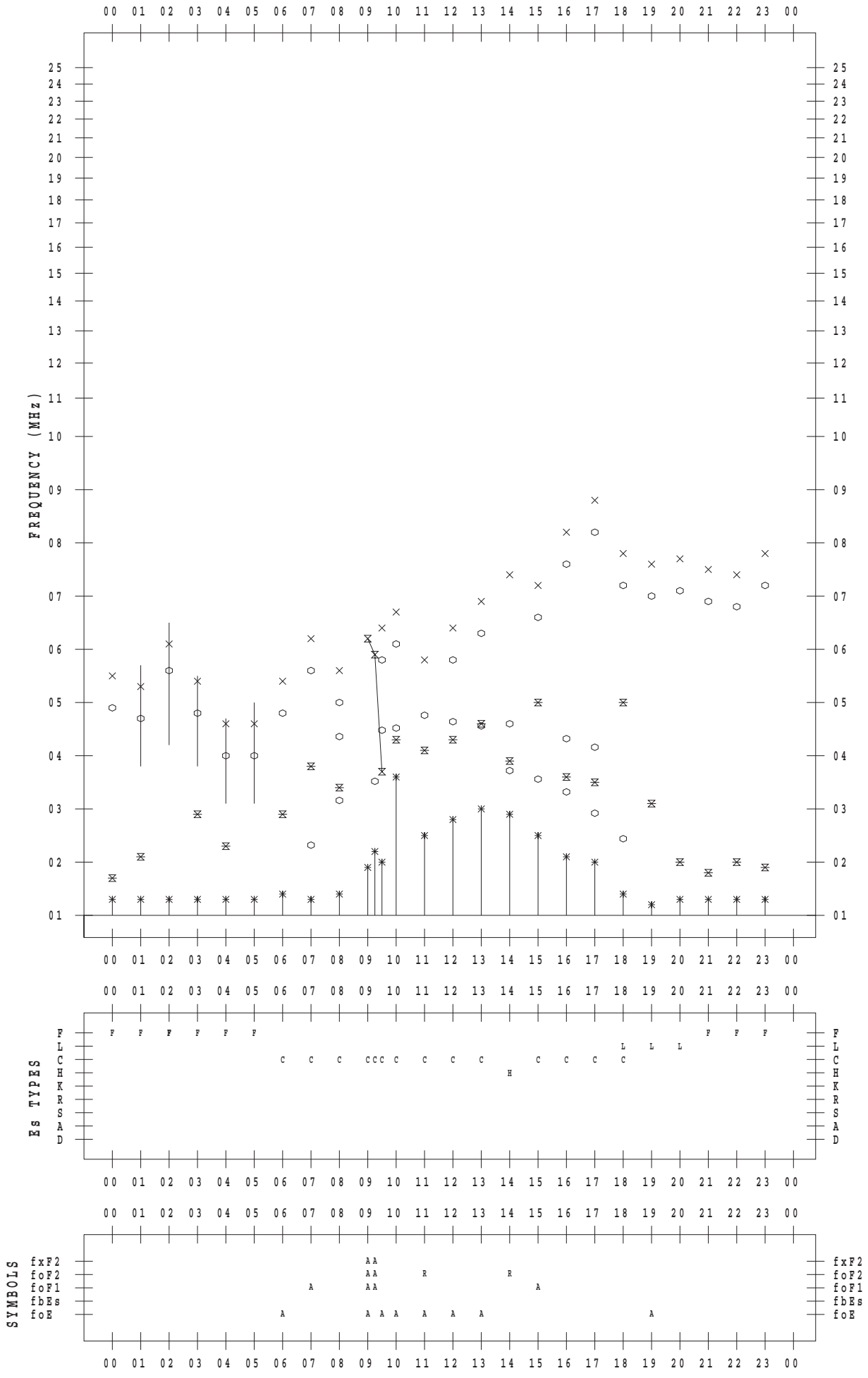
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/10

135 °E MEAN TIME



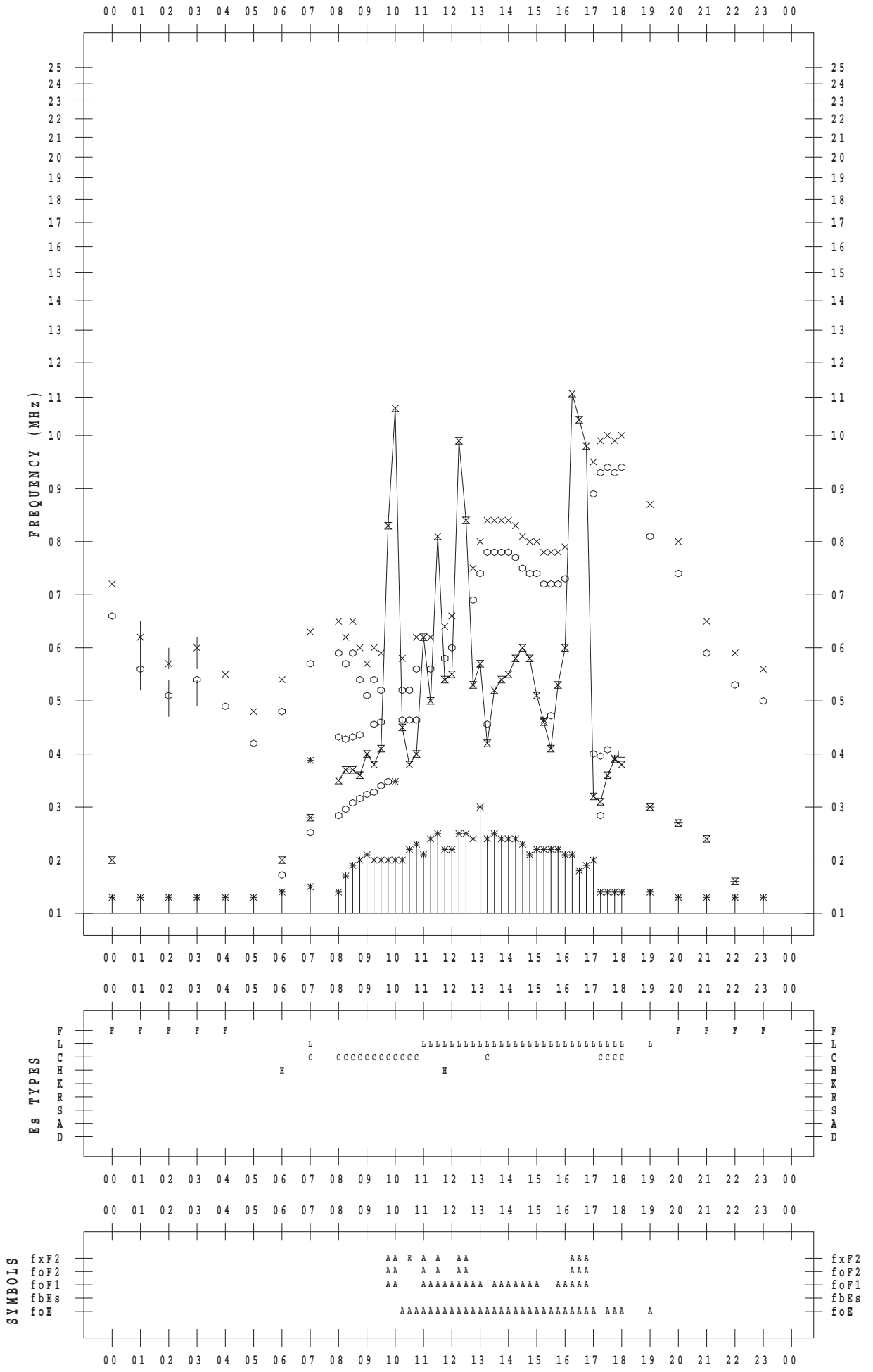
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/11

135 °E MEAN TIME



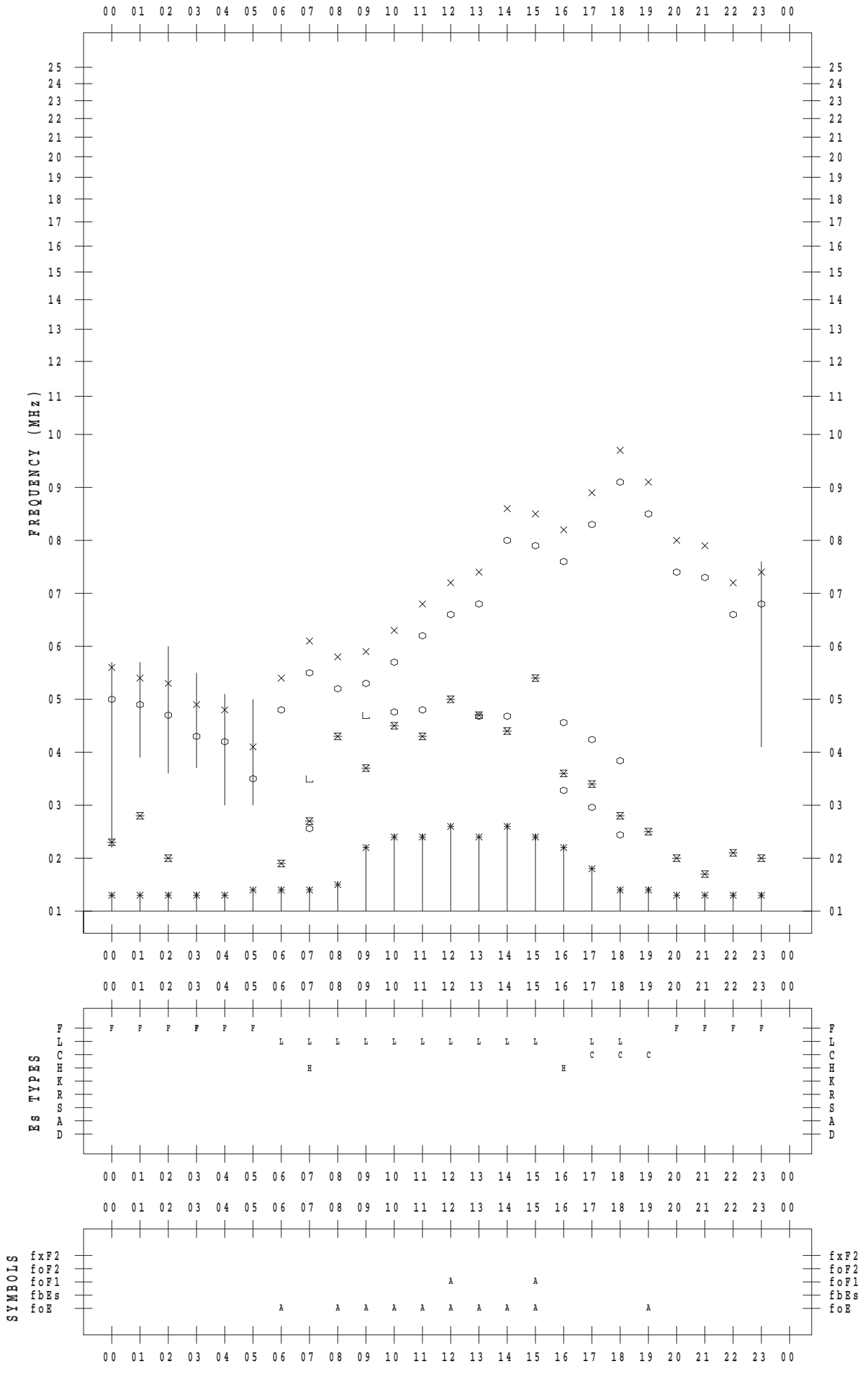
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/12

135 °E MEAN TIME



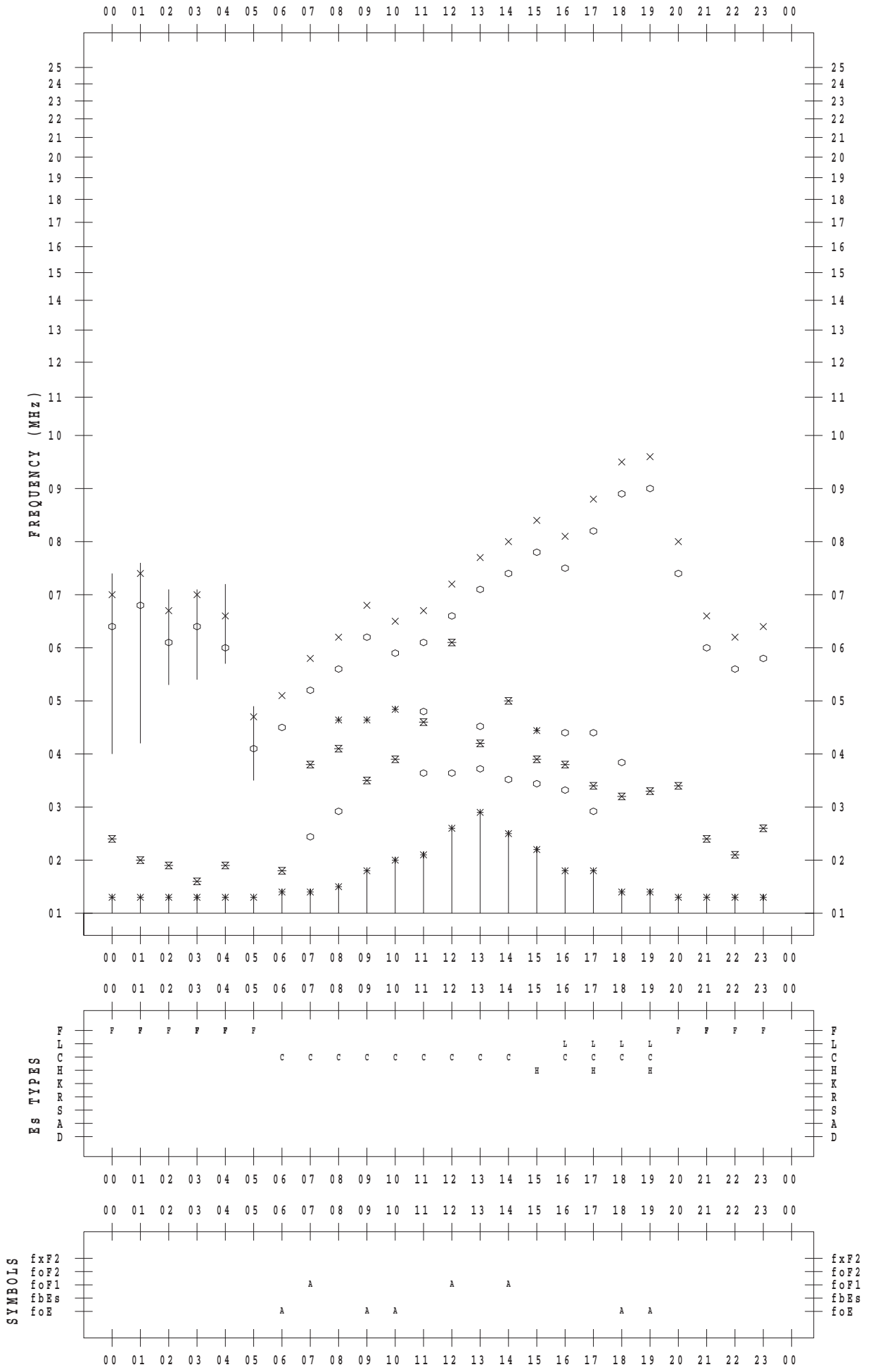
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/13

135 °E MEAN TIME



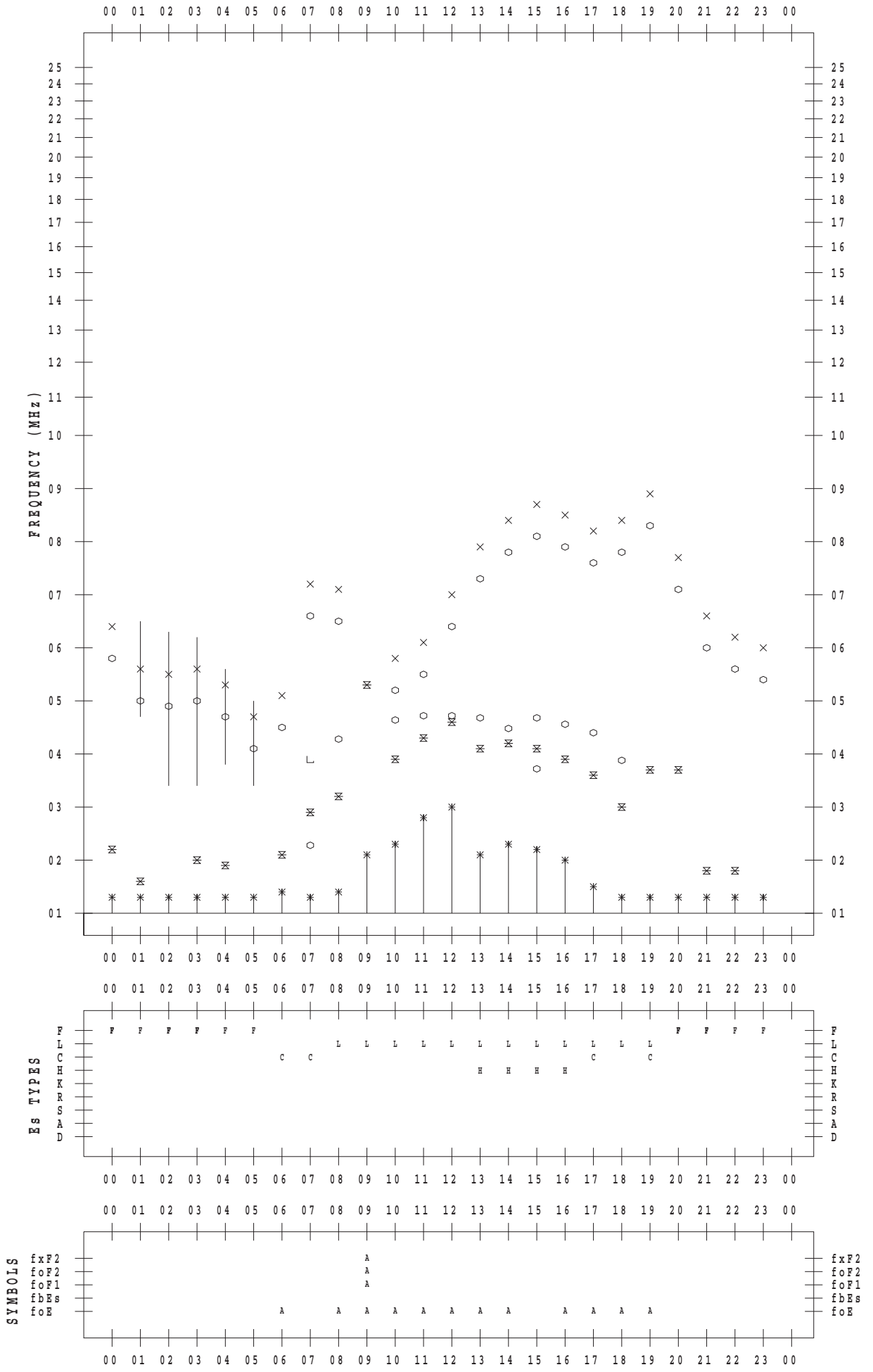
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/14

135 °E MEAN TIME



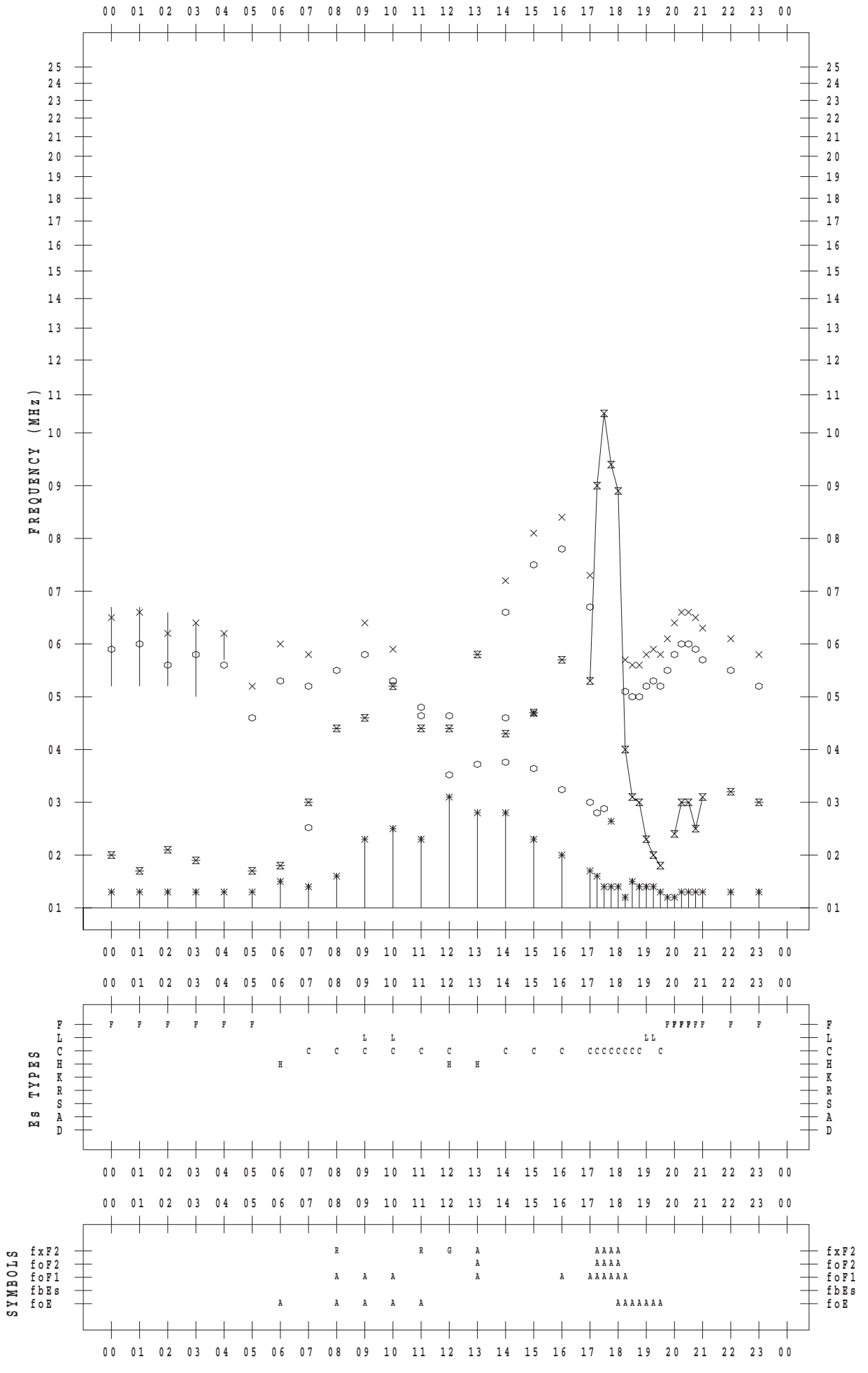
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/15

135 °E MEAN TIME



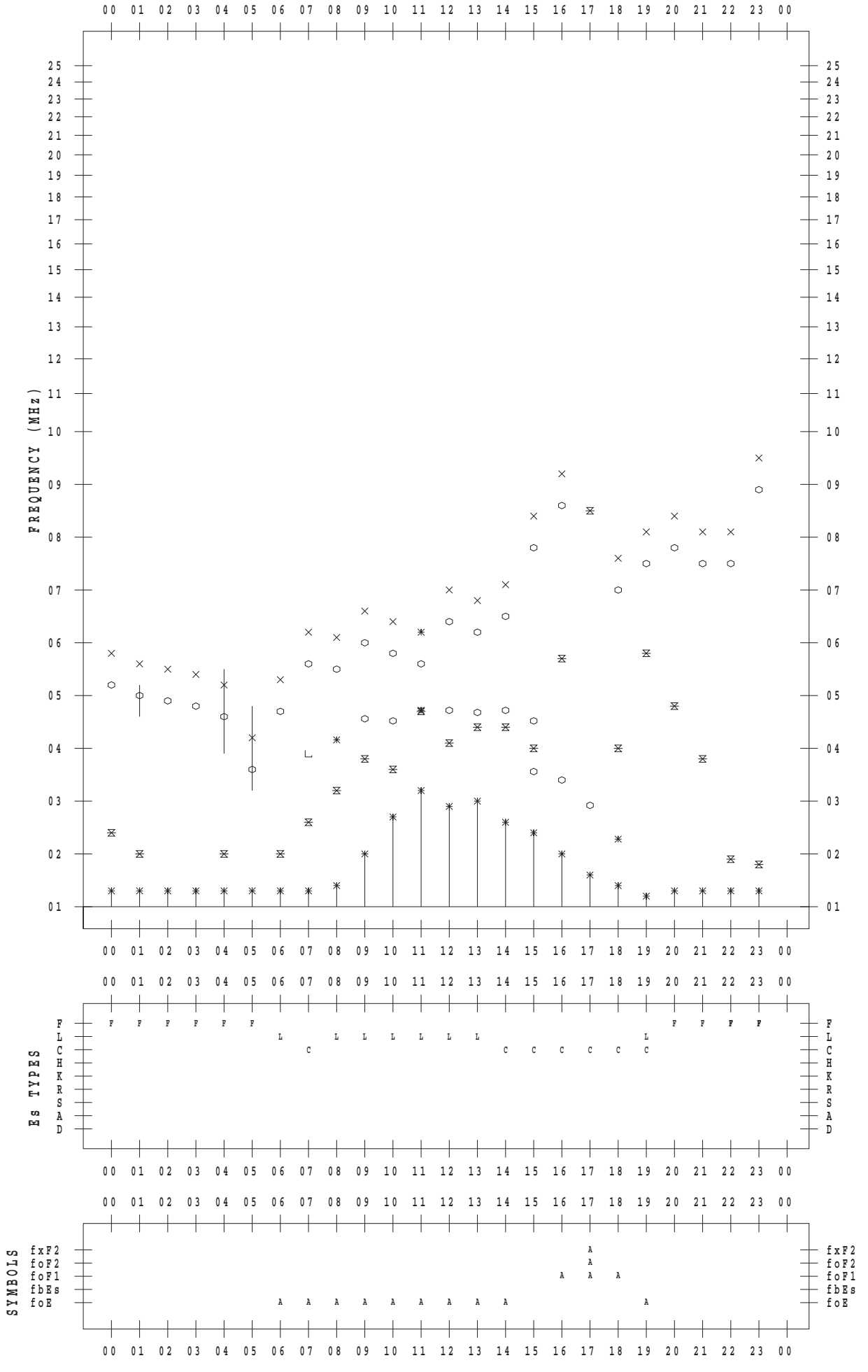
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/16

135 °E MEAN TIME



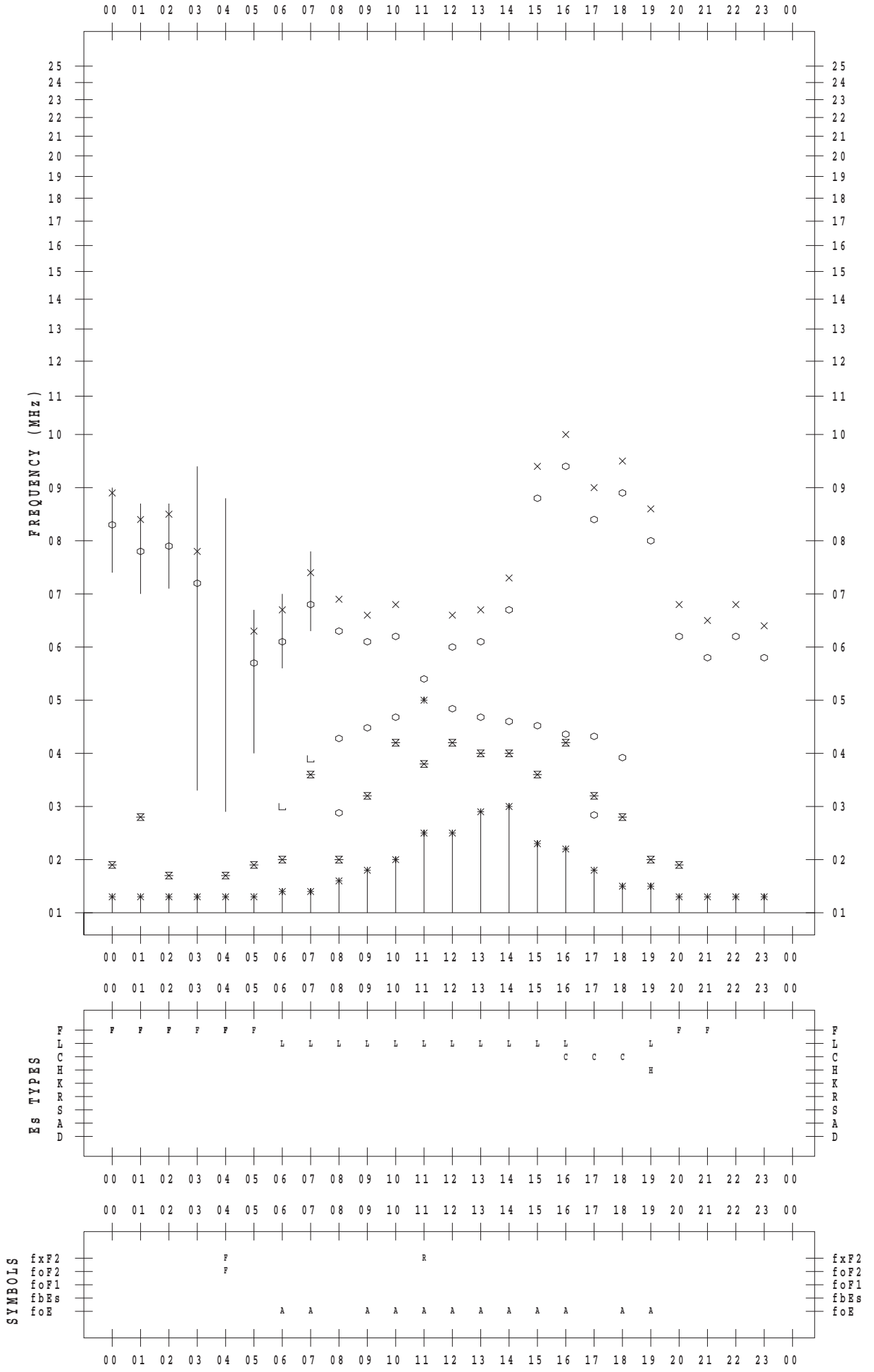
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/17

135 °E MEAN TIME



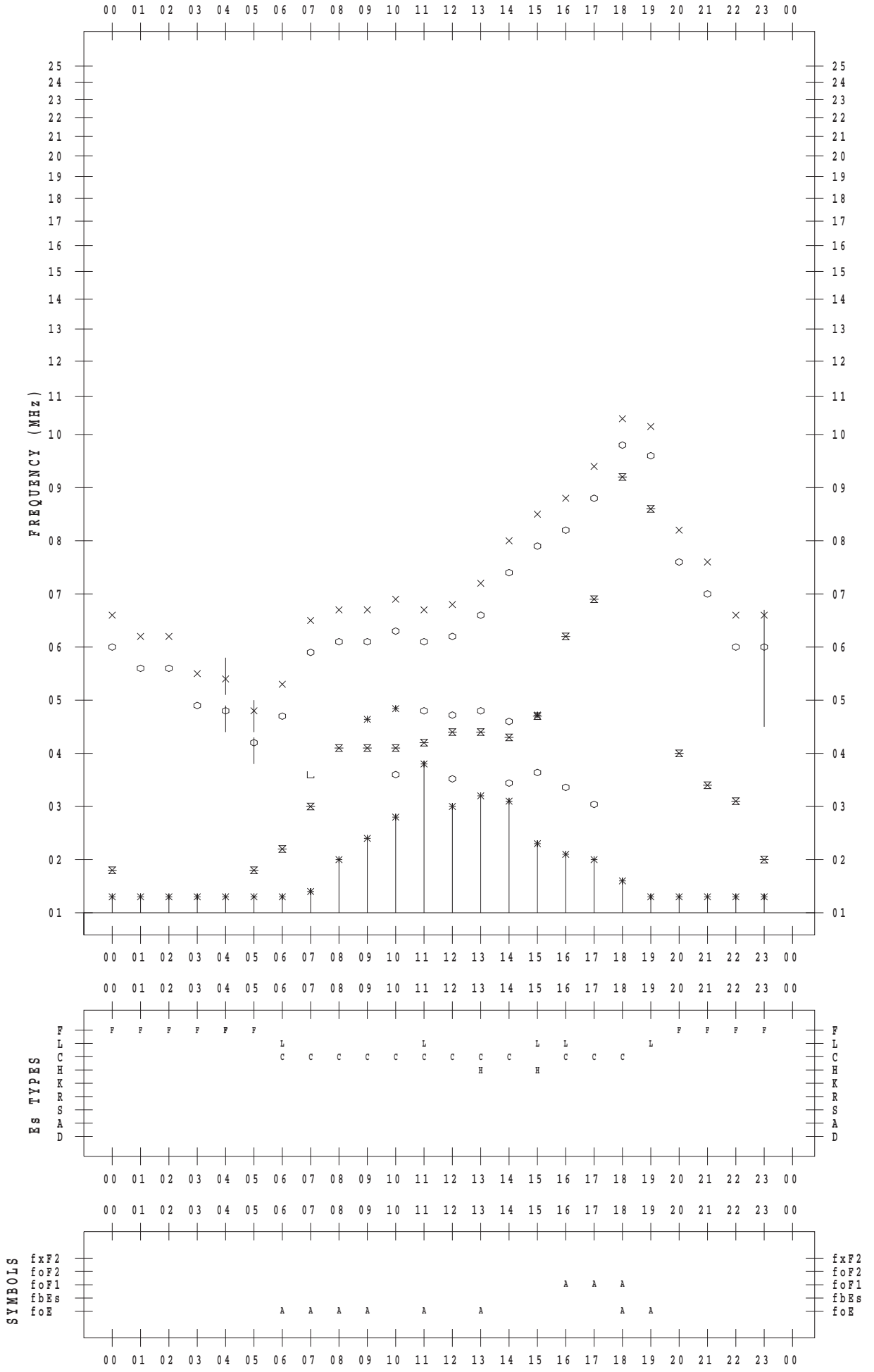
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/18

135 °E MEAN TIME



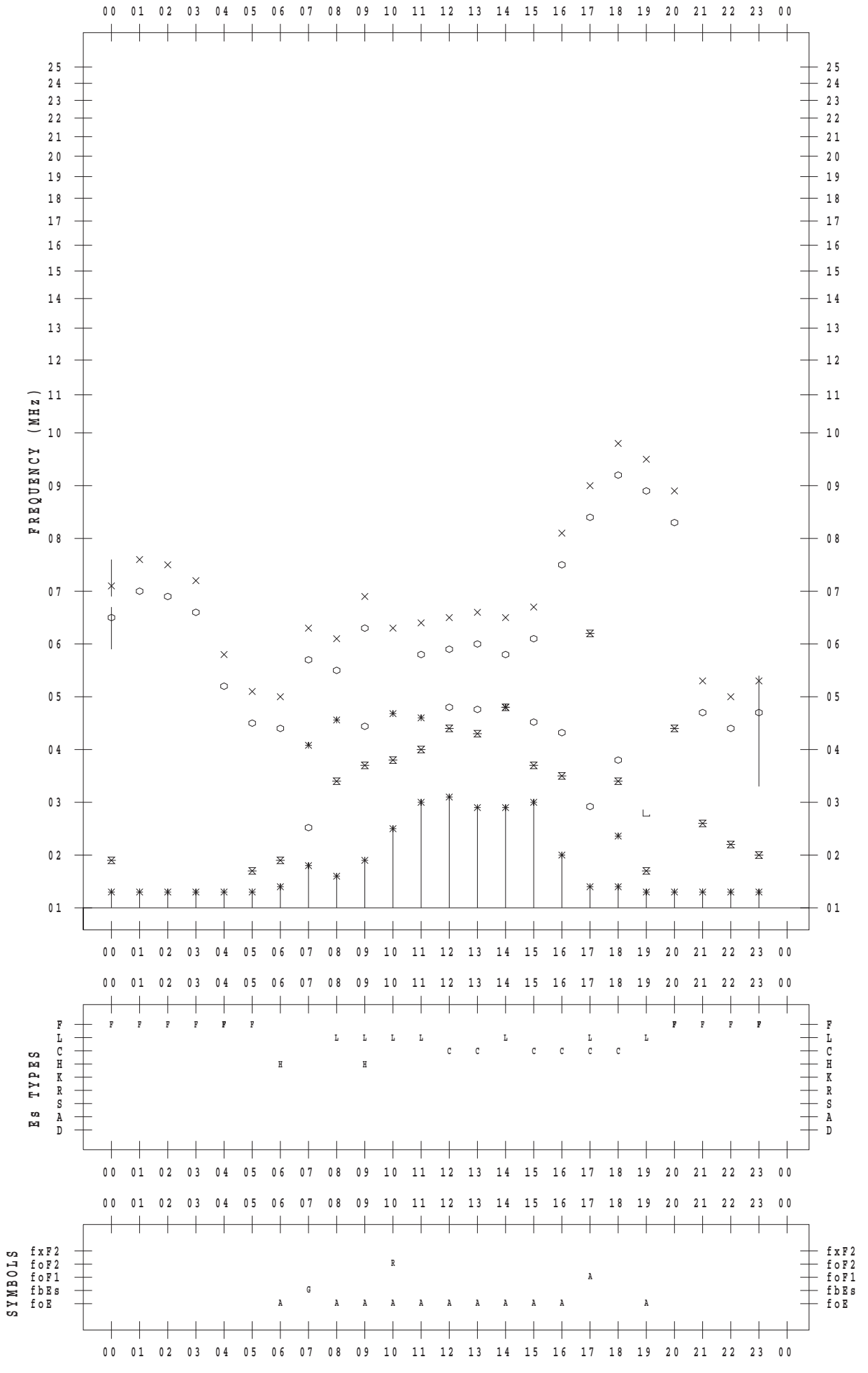
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/19

135 °E MEAN TIME



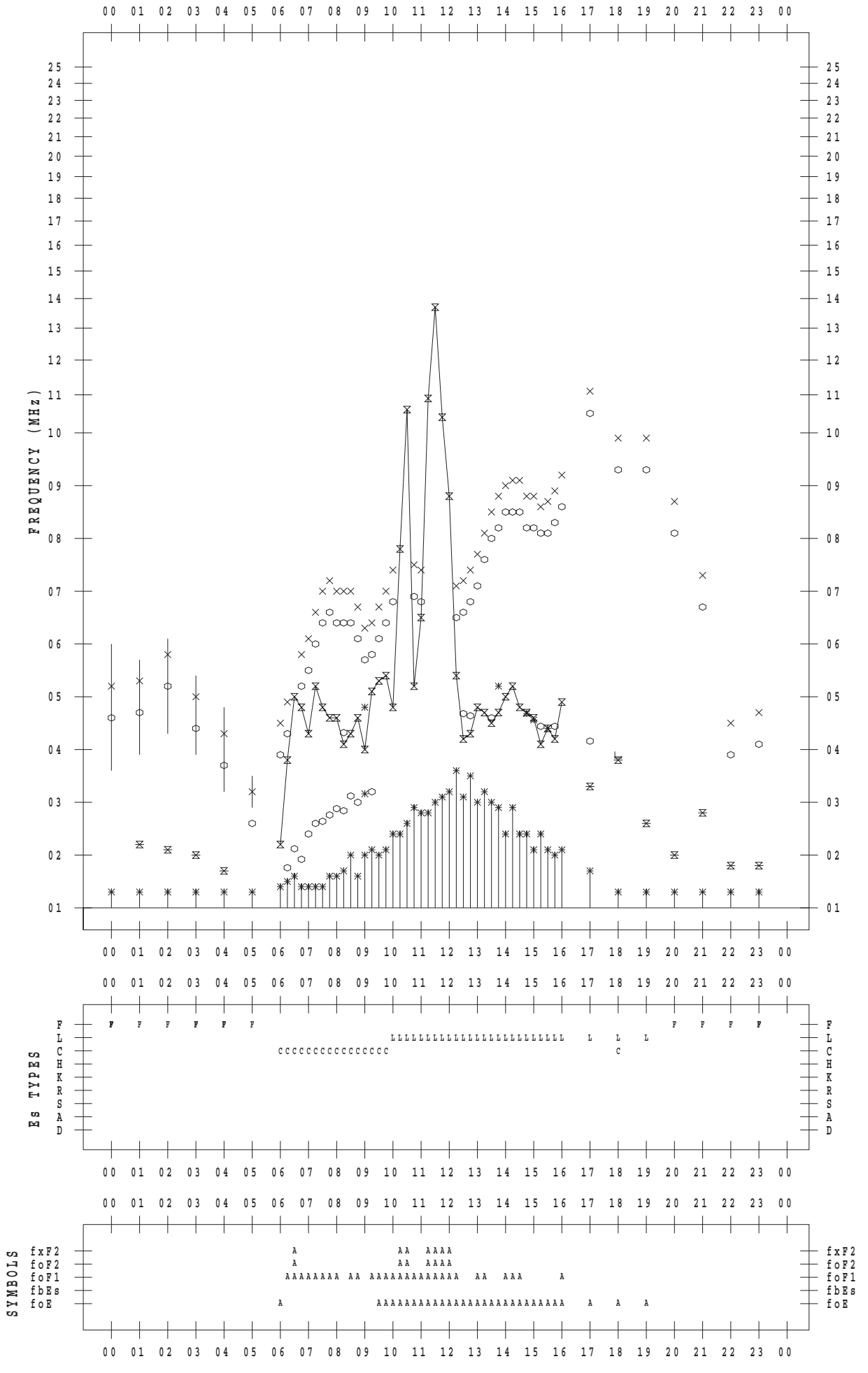
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/20

135 °E MEAN TIME



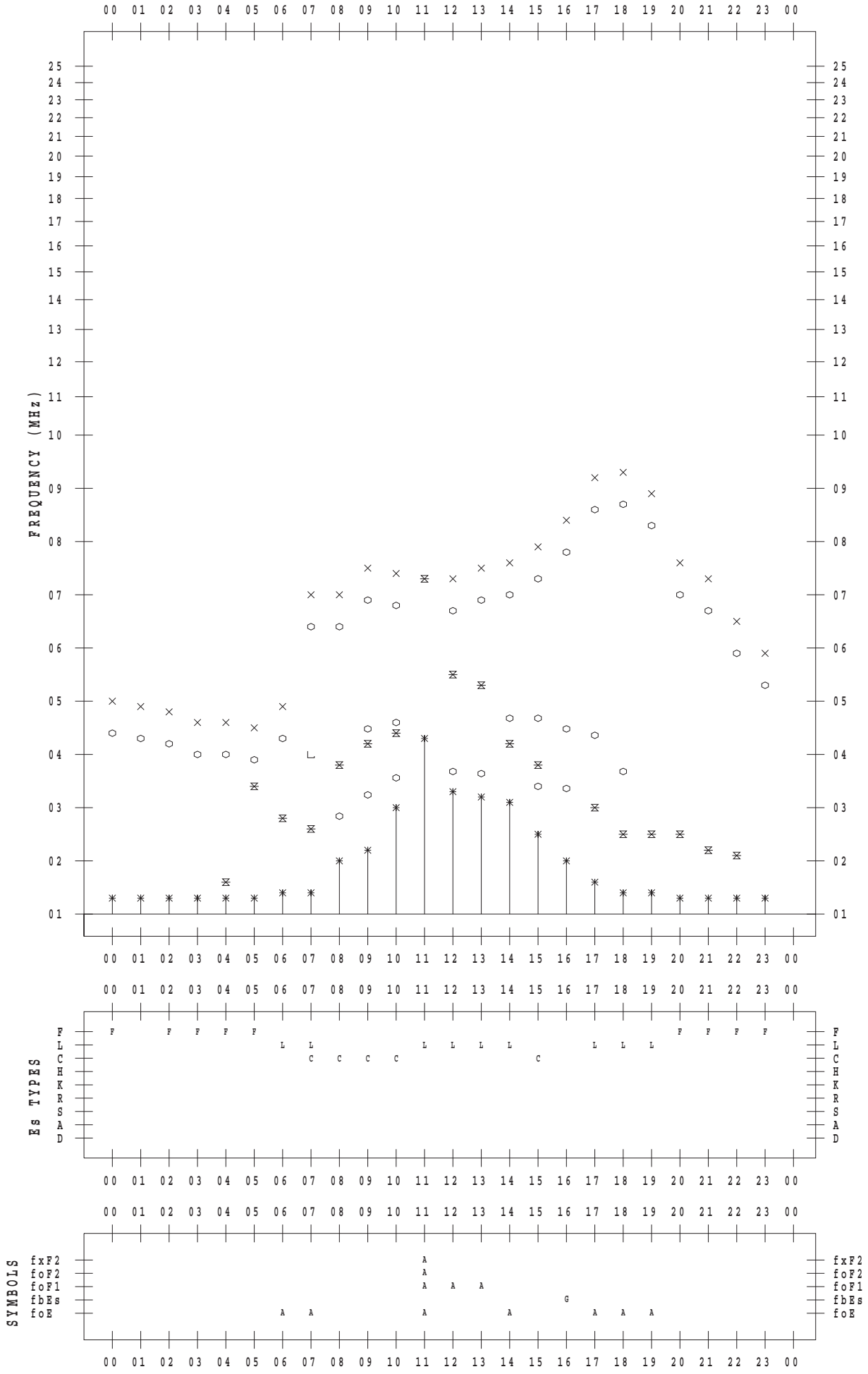
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/21

135 °E MEAN TIME



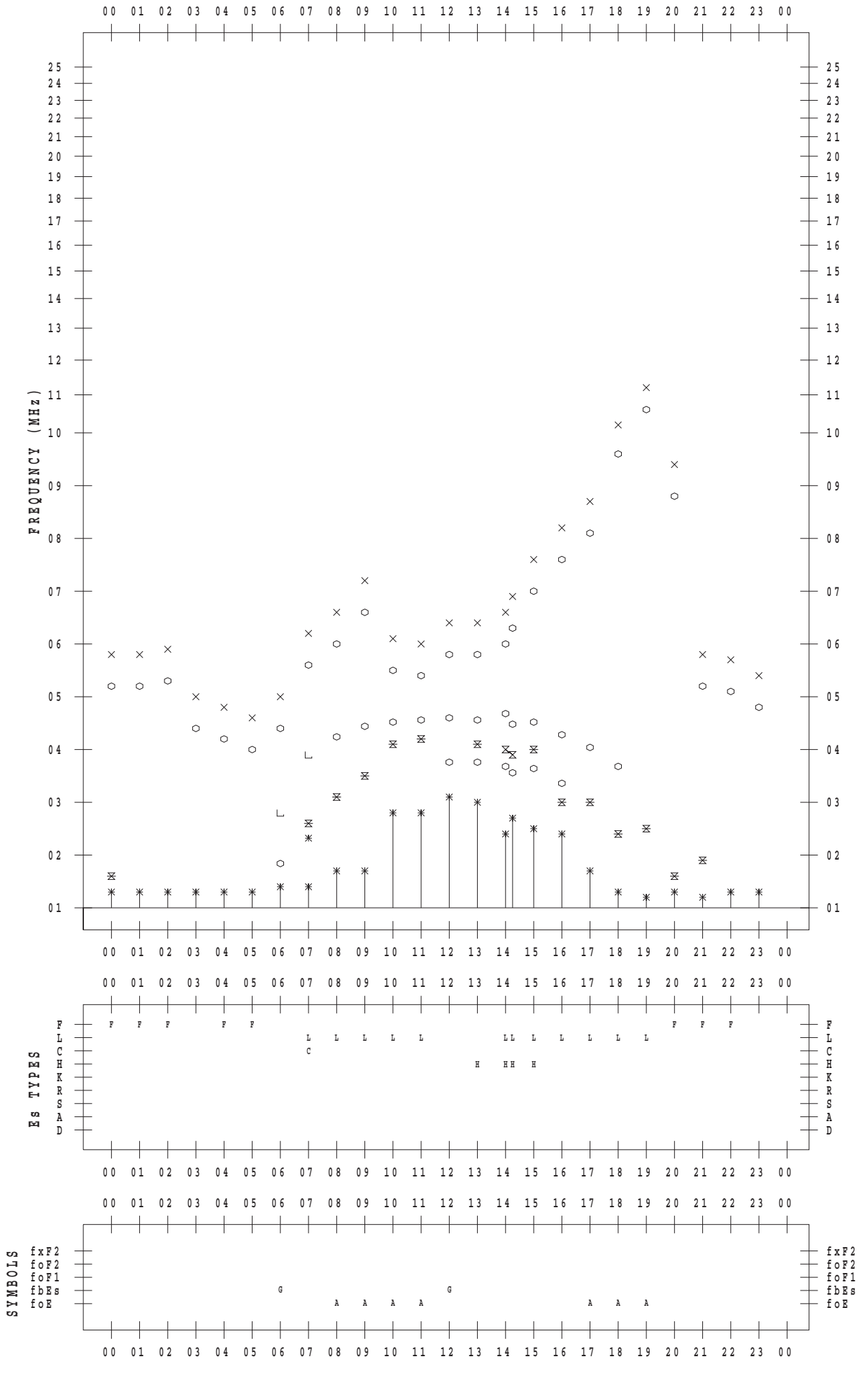
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/22

135 °E MEAN TIME



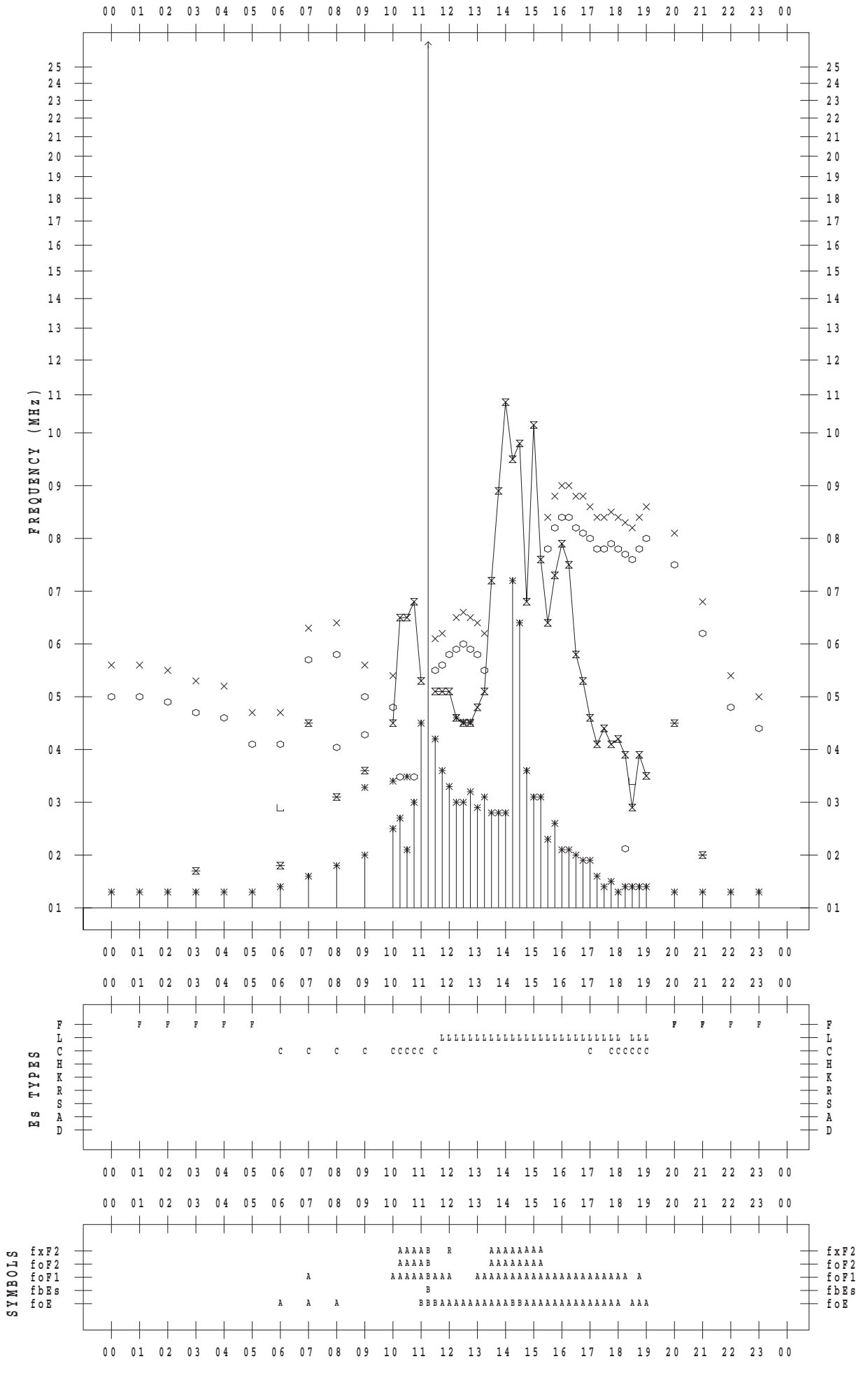
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/23

135 °E MEAN TIME



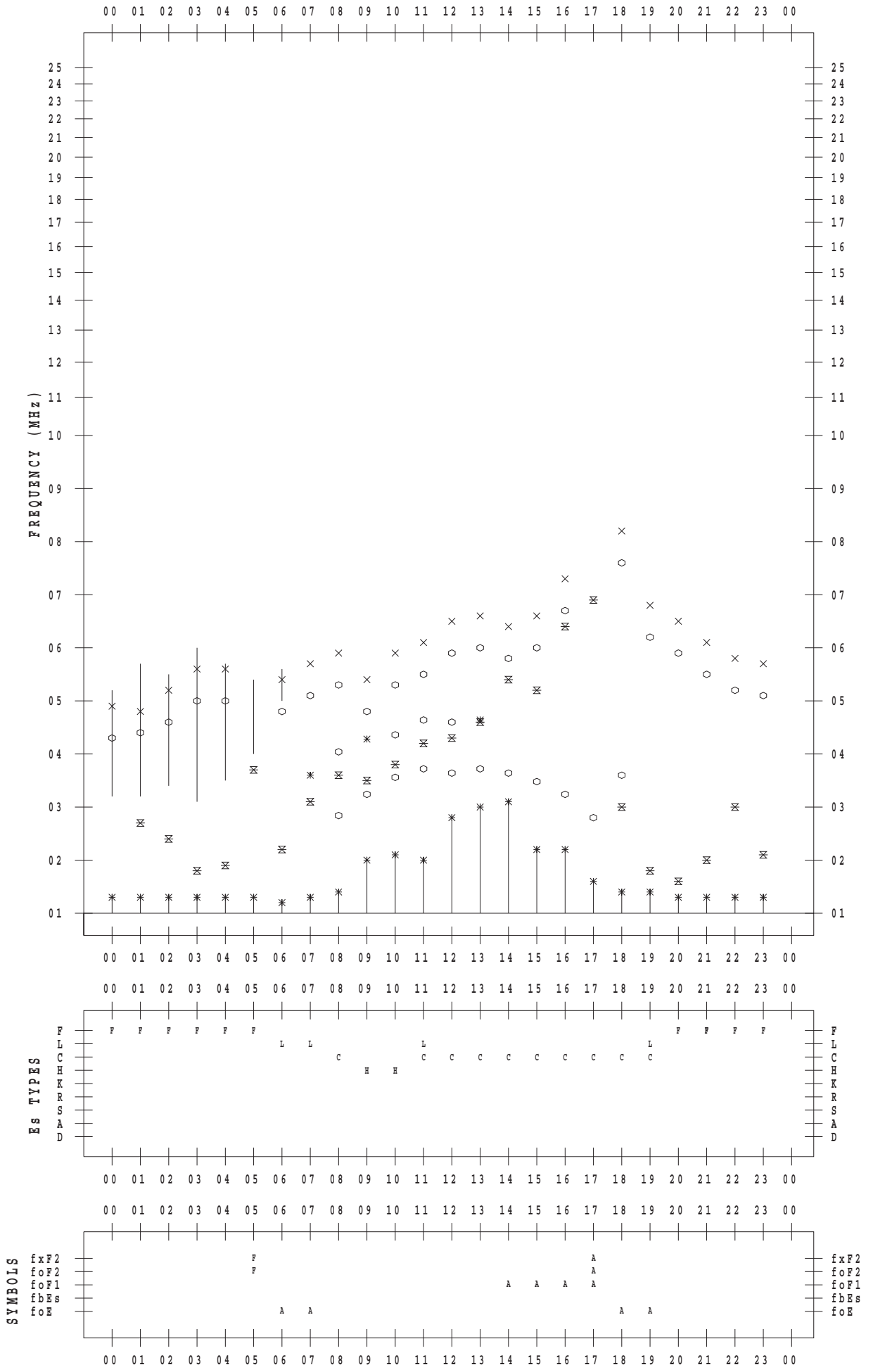
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/24

135 °E MEAN TIME



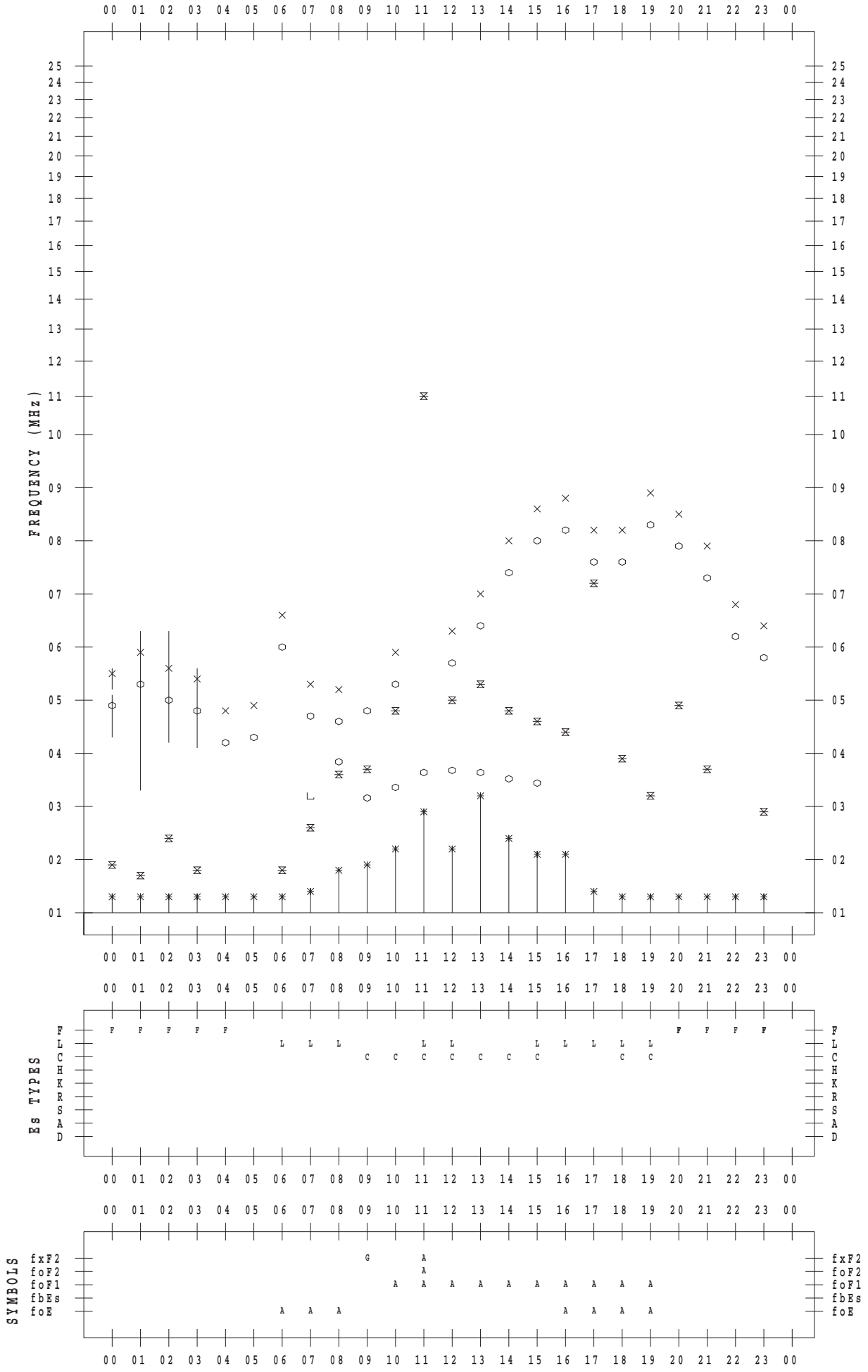
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/25

135 °E MEAN TIME



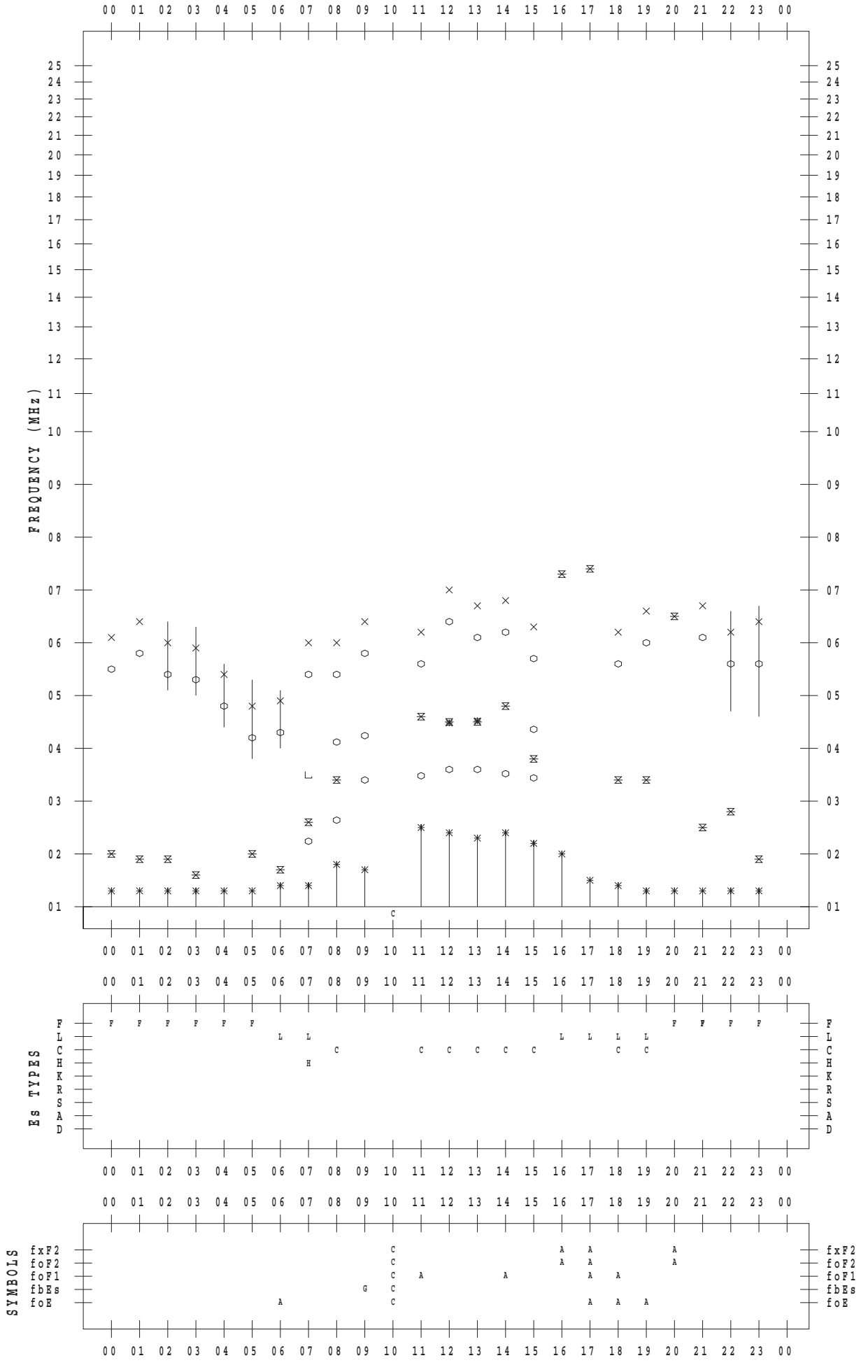
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/26

135 °E MEAN TIME



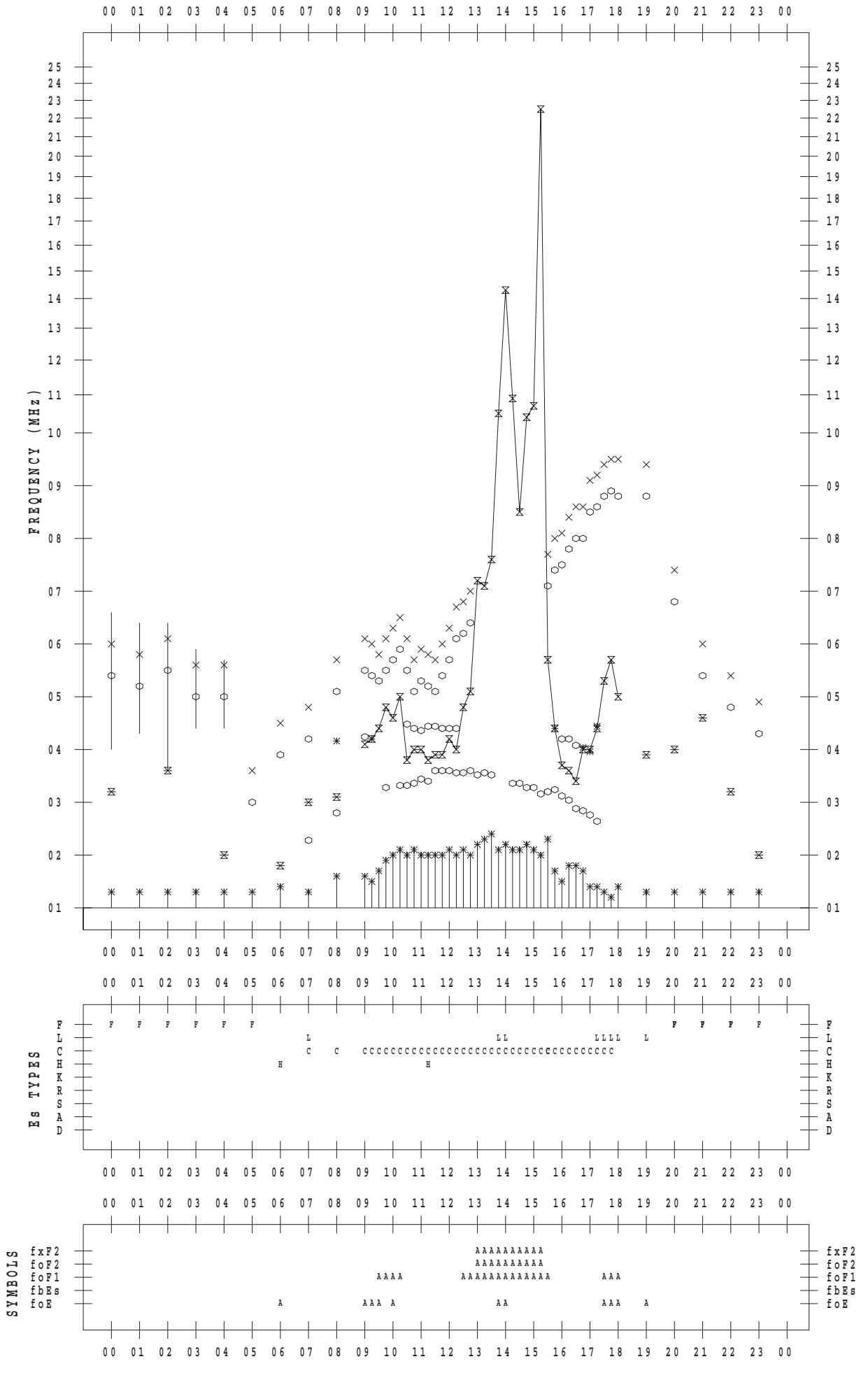
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/27

135 °E MEAN TIME



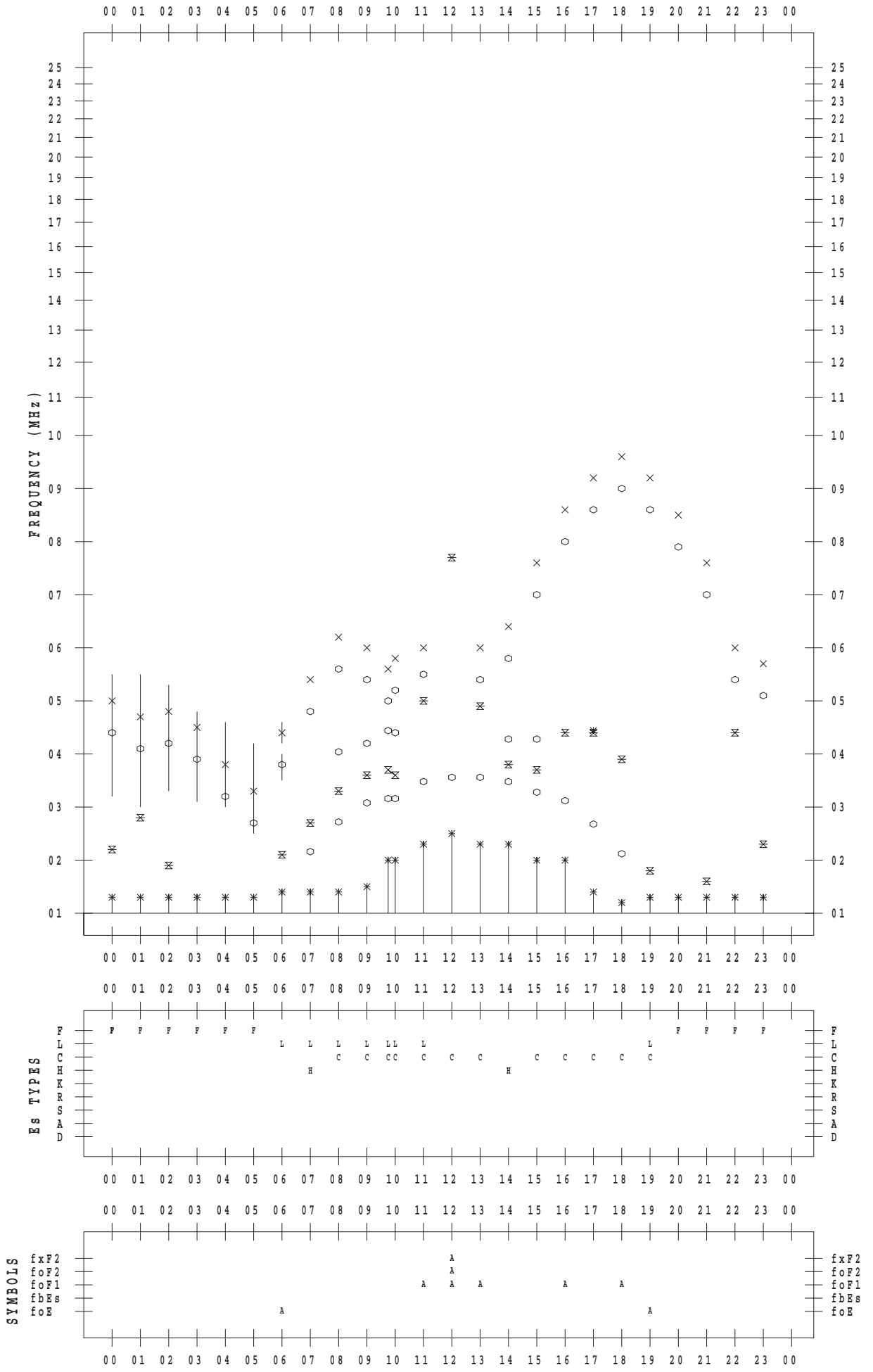
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/28

135 °E MEAN TIME



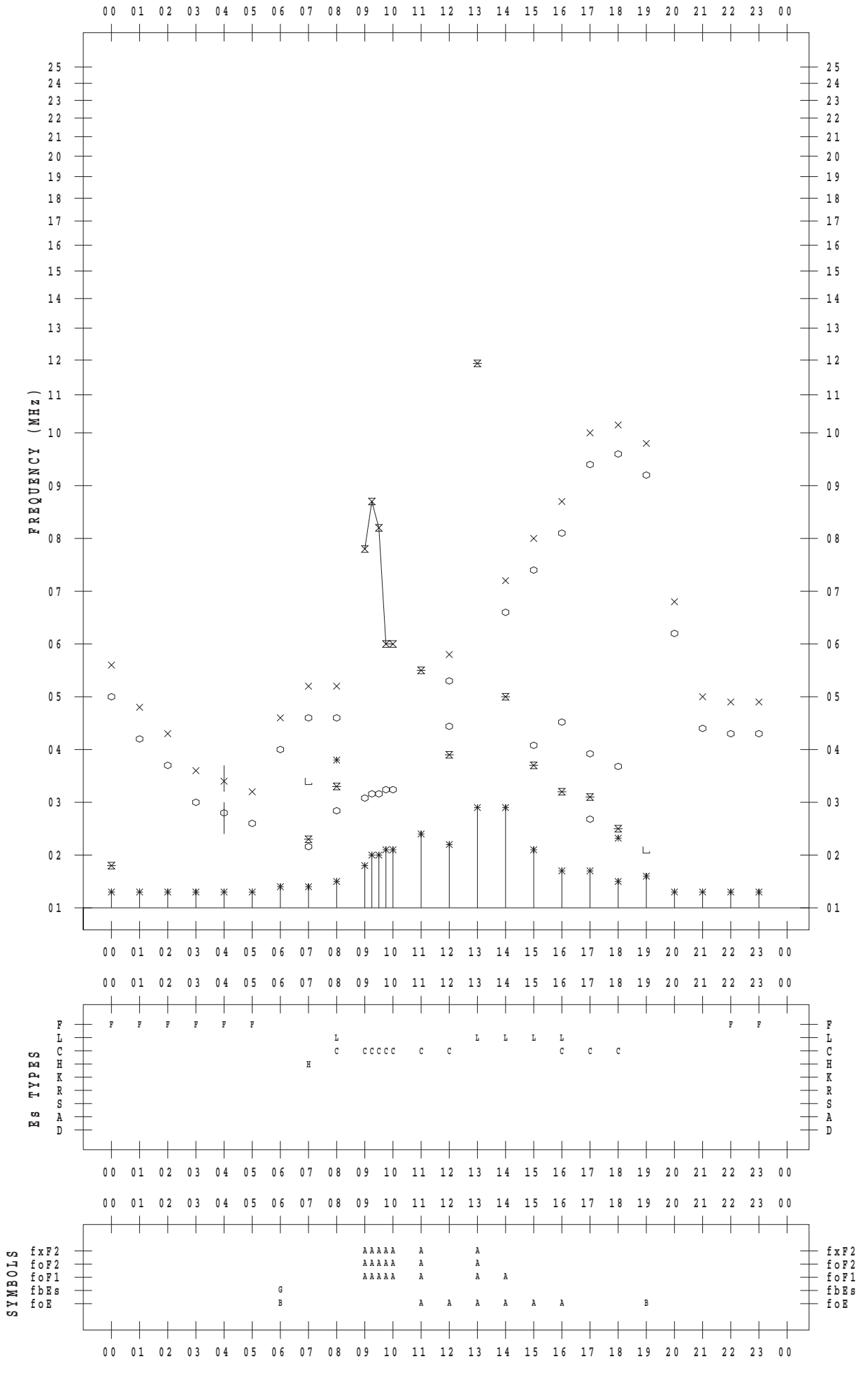
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/29

135 °E MEAN TIME



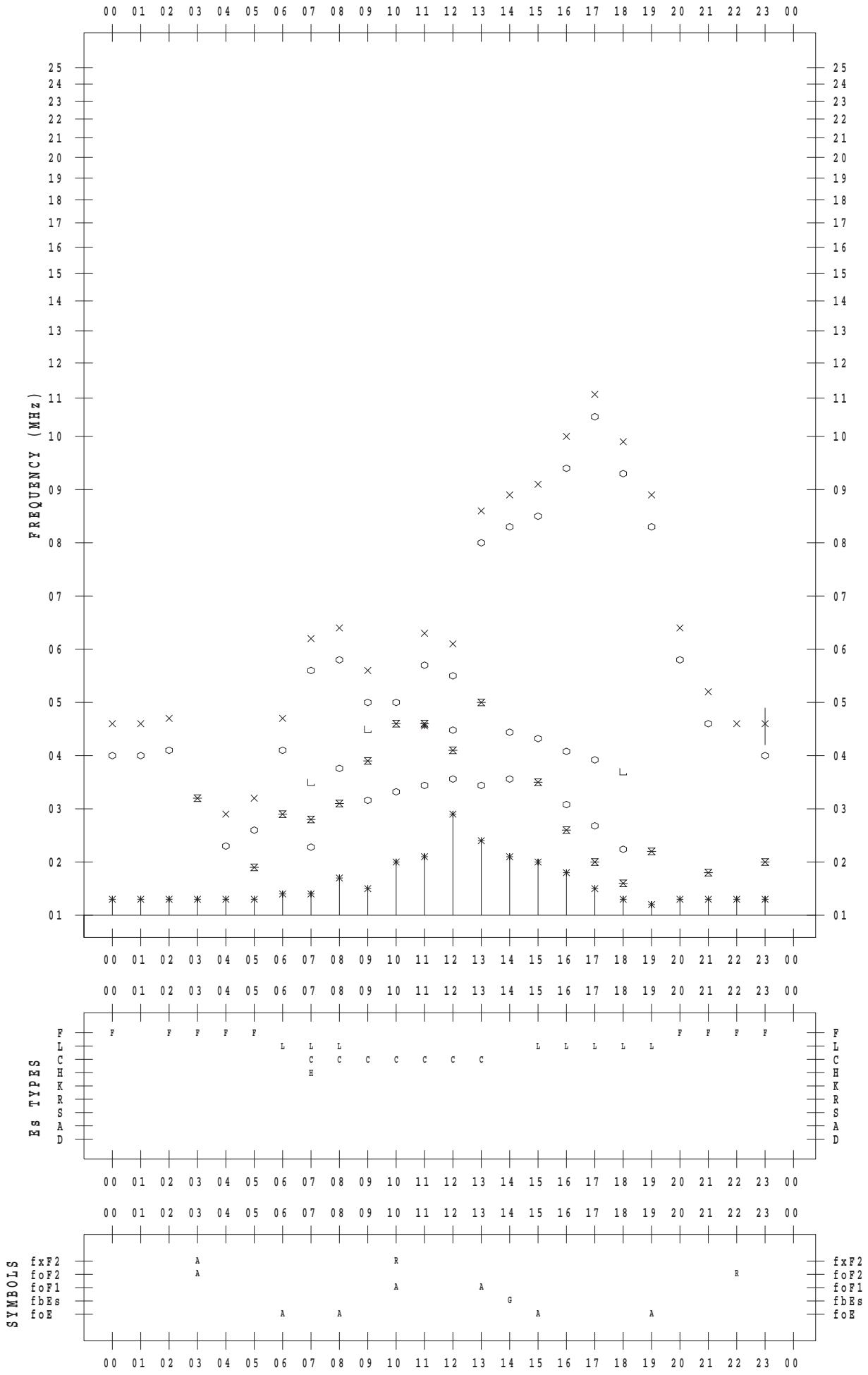
f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/30

135 °E MEAN TIME



f-PLOT DATA

SCALER : I.YAMAZAKI

STATION : Okinawa

DATE : 2016/ 7/31

135 °E MEAN TIME